

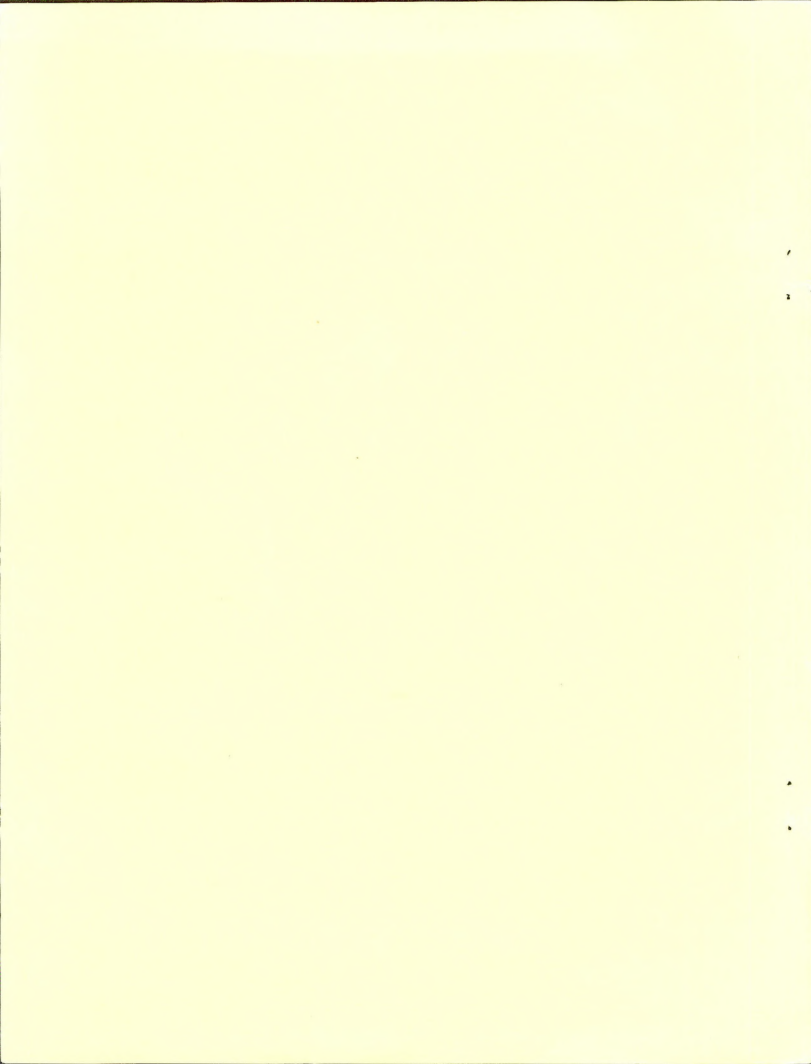


Sensitive Animals of the Jarbidge Resource Area, Idaho – Additions

by
Jim Klott



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**Sensitive Animals of the
Jarbidge Resource Area, Idaho - Additions**

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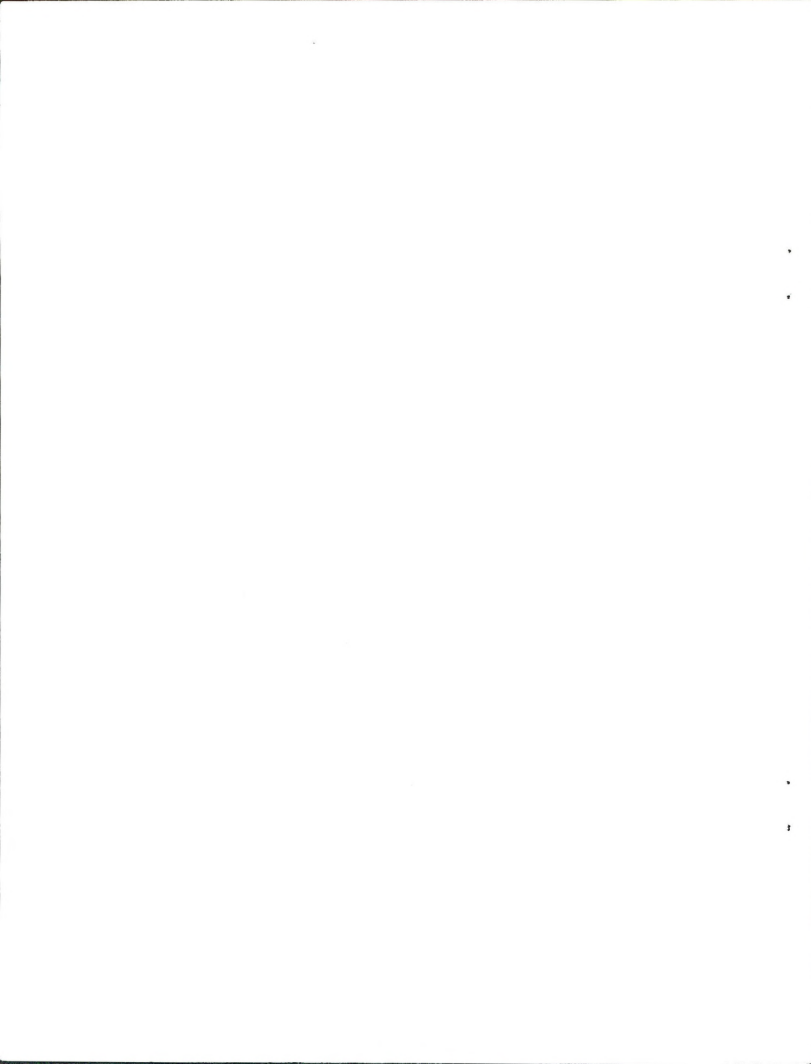
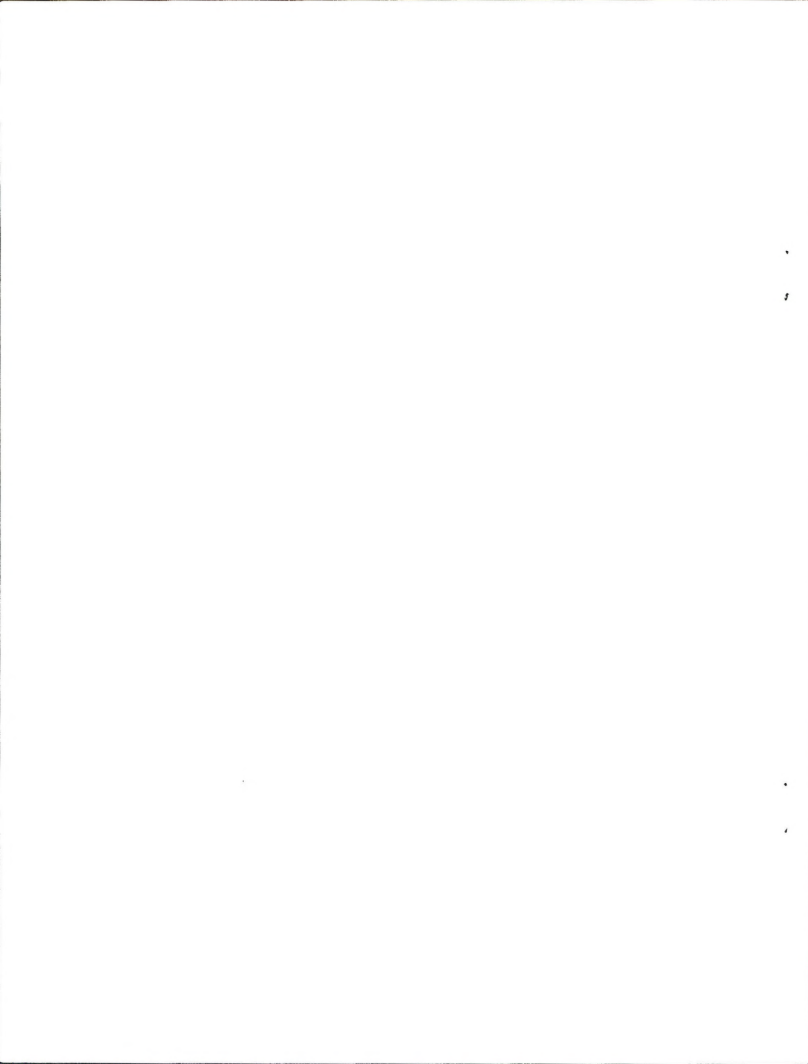


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Introduction

In 1996 the Idaho State Office of the Bureau of Land Management (BLM) published Technical Bulletin 96-10, titled "Sensitive Animals of the Jarbidge Resource Area, Idaho". Since that time the Idaho BLM updated its sensitive species list. The new list includes a number of animal species that show either declining populations or for which there is very little information. On the updated sensitive species list is a new "Watch" category, which indicates that these species are of concern to the BLM, but are not designated as "sensitive". The Watch list consists of those species whose populations and range appear restricted, but information is lacking to determine which populations are declining, the cause of population declines, or if management actions are needed to reduce or remove threats.

The status of many of the bird species are based in part upon various author's interpretation of the Breeding Bird Survey routes (BBS). The Breeding Bird Survey was initiated in 1966 by the United States and Canada to look at long term changes in bird populations. A BBS route has 50 stops that are 0.5 miles apart and cover 24.5 miles. At each stop the number of birds detected are listed by species for a 3 minute time period. The route is in the same location and is checked annually during the peak of breeding season. There is only one BBS route in the Jarbidge Resource Area, which was first checked in the late 1980's. With the exception of Stokes and Stokes (1996), most authors (Saab and Groves 1992, Dobkin 1994, and Ritter 1996) do not provide a detailed explanation as to what BBS route data were examined in determining population trends (range wide, western region, state) or whether the information is based upon long-term data or data from a specific time period. This could explain some of the contradictions in the population trends between authors. Finch (1991) and Peterjohn et al. (1995) discuss possible problems with interpreting BBS route data.

Finch (1991), Bock et al. (1993) and Dobkin (1994) discussed a number of problems in assessing impacts of land uses with declining wildlife populations. In some instances there maybe a direct cause and effect relationship. However, more often things like habitat fragmentation, size of the particular habitat, and long-term habitat changes or degradation are difficult to assess. For migratory wildlife changes to habitat along migration routes or at wintering areas may magnify or exceed the impacts of habitat changes at breeding areas (Moore et al. 1995, Petit et al. 1995). For some passerine bird species the western expansion of the brown-headed cowbird is of concern because of impacts on reproduction (Robinson et al. 1995). On public lands administered by the BLM in Idaho, human caused disturbances are most closely associated with grazing, logging, mining, and in some instances recreation.

Numerous authors have addressed impacts of logging on birds (Franzreb and Ohmart 1978, Dickson et al. 1983, Mannan and Meslow 1984, Medin 1985, Finch 1991, Tobalske et al. 1991, Thompson et al. 1993, Hutto et al. 1993). In general some species appear to require large blocks of old-growth habitat, whereas other species increase in clearcut areas. Some species tolerate logging if adequate snags and uncut trees are left. Bock et al. (1993) notes that some of the

grazing-neotropical bird studies have contradictory results which could be attributed to different grazing seasons, levels of use, and species habitat requirements. Sedgwick and Knopf (1987) found under the conditions of fall grazing and moderate use (less than 50% utilization), there were no detectible differences between grazed and ungrazed pastures on the density of bird species in the short term. However, studies done in riparian areas with season long or heavy grazing have documented adverse affects on the nesting of some bird species (Taylor 1986, Taylor and Littlefield 1986) as well as damaging riparian vegetation (Kauffman and Krueger 1984, Knopf et al. 1988, Kay and Chaddle 1992, Kovalchik and Elmore 1992). Kovalchik and Elmore (1992) discuss riparian grazing systems that allow for the recovery of riparian habitats. Research has been more focused on migratory birds and not addressed non-migratory species to the same extent. There were no long term studies to assess grazing and impacts on wildlife or riparian vegetation.

Where possible articles from refereed scientific journals were used to document threats. In some instances the references were from the proceedings of symposia or conferences which are not peer reviewed and considered "gray" literature. In other instances personal observations or unpublished data were used to identify threats (increased man caused fires, shooting of protected wildlife).

Acknowledgements

I acknowledge the staff at the BLM Library in Denver, Colorado for obtaining many of the books and other publications. In particular I wish to thank Joan Penzien, Barbara Campbell, and Crystal Trujillo for the many hours spent filling literature requests. Without the assistance of the BLM library staff this publication would not have been possible.

Northern Harrier (*Circus cyaneus*)

Description:

Northern harriers, also called marsh hawks, are moderate sized (18 inches) raptors. Female northern harriers have a brownish head, neck, and breast and are darker brown on the back. Females are about a third larger in size than males (Johnsgard 1990). Male northern harriers are gray in color on the head, neck and back with black on the five outermost wing feathers (Johnsgard 1990). Both sexes have a white band along the rump just above the tail, long wings, and a long tail (Peterson 1990, Udvardy 1977). Juvenile and subadult young are similar to the adult female in appearance (Johnsgard 1990). In the Idaho northern harriers are not easily confused with any other hawk because of their white rump patch and slow, low level flight with the wings held in shallow "V".

Distribution:

Northern harriers winter from northwestern Washington to southern Wyoming, east across Iowa to northeast New England. They winter as far south as northern Columbia (Ehrlich et al. 1988, Johnsgard 1990). Breeding range for northern harriers extends from central Alaska eastward to Ontario, Canada southward to central California, northern Arizona, northern Oklahoma, Indiana and Delaware (Johnsgard 1990). Northern harriers in Idaho are considered to be yearlong residents (Stephens and Sturts 1991). In Idaho northern harriers have been reported to breed throughout most of the state (Stephens and Sturts 1991). Northern harriers relatively common throughout the Jarbidge Resource Area.

Habitat:

Johnsgard (1990) reported that northern harriers are found primarily in grassland, wetland or marshy habitats. He considered northern harriers an open country species. Martin (1987) reported that northern harriers use riparian zones and cultivated fields more than sagebrush uplands. Northern harriers are seen using a variety of plant communities in the Jarbidge Resource Area including mountain shrub, sagebrush/grass, crested wheat grass seedings, annual grassland, wet meadows, and riparian areas.

Biology:

Marsh hawks are year round residents in portions of their range (Enderson 1964) including southern Idaho. Courtship flights begin in the spring with breeding likely to occur shortly after nest site selection (Johnsgard 1990). In the Jarbidge Resource Area courtship flights have been observed in early May. Males and females do not appear to form long term pair bonds and some males are polygynous (Johnsgard 1990, Reynolds et al. 1994). Unlike some other raptors northern harriers do not exhibit nest site fidelity (Johnsgard 1990, Reynolds et al. 1994). Northern harriers primarily nest on the ground with the nest being loosely constructed of sticks and grass (Ehrlich et al. 1988). Dobkin (1994) commented that northern harriers occasionally nest low in shrubs, emergent vegetation, or dense riparian thickets. Hamerstrom and Kopeny (1981) and Johnsgard (1990) noted that vegetation around nests seemed to provide some sort of visual

protection early in the nesting season. In the Jarbidge Resource Area nests have been found in dense sagebrush, mountain snowberry patches, and in dense grass in a crested wheatgrass seeding. Males feed the females during courtship, egg laying, incubation, and to about three weeks following hatching of the eggs (Martin 1987). Females lay between 4 and 9 bluish white eggs with t being the average clutch size. Female northern harriers incubate the eggs for up to 5 weeks and the hatchlings fledge in approximately 4 weeks (Ehrlich et al. 1988). Diets of northern harriers are varied and includes small mammals, primarily voles (Rice 1982, Hamerstrom et al. 1985, Barnard 1987, Martin 1987), birds (Barnard et al. 1987, Ehrlich et al. 1988), reptiles (Sherrod 1978, Martin 1987, Johnsgard 1990), and insects (Ehrlich et al. 1988, Johnsgard 1990). Northern harriers are able to hunt using hearing as well as vision (Rice 1982). Rice (1982) commented that low level flights allows northern harriers to better use acoustic clues when hunting. However, Martin (1987) commented that dense or tall herbaceous vegetation could hinder northern harrier hunting by alerting the prey to the hawk as it hit the vegetation, slowing the strike, or interfering with the closing of the talons. Temeles (1989) noted that northern harriers frequently cease hunting for a short period once they have consumed prey. Home range size varies between males and females. Male home ranges average nearly 6.0 square miles, whereas, the female home range is roughly 0.5 square miles (Martin 1987). Home range size is likely influenced by a number of factors including suitable foraging areas and prey density.

Status:

The northern harrier was added to the Idaho BLM Sensitive Species list in the fall of 1996. Saab and Groves (1992) reported that northern harrier populations had a significant downward trend. Dobkin (1994) wrote that northern harrier declines in Montana were significant and that Idaho populations showed a steady decline. Ritter (1996) noted that northern harrier abundance was down throughout its range and mentioned threats to its breeding and winter range. Ritter (196) indicated that northern harrier populations showed a 26 year decline. Stokes and Stokes (1996) report a decline for northern harriers in the West based upon BBS routes. Northern harriers are one of the more commonly observed raptors in the Jarbidge Resource Area in sagebrush/grass and grassland habitats.

Threats:

Threats to northern harriers have been identified as loss of wetland habitats and overall habitat degradation including heavy grazing by livestock in nesting areas (Dobkin 1994, Bock et al. 1993). Egg shell thinning due to pesticides has also been attributed to the decline of northern harriers (Dobkin 1994). Duebbert and Lokemoen (1977) and Bock et al. (1993) reported that northern harriers were not found to nest in heavily grazed areas. The absence of nesting in heavily grazed areas is attributed to reduced residual herbaceous cover to levels not suitable for this species. Other threats important locally include the conversion of native habitats to exotic annual grassland or perennial grass seedings affecting the prey base and vegetation (Reynolds and Trost 1980). Impacts to the prey base include fewer prey species and overall numbers. Specific prey species that show declines resulting from habitat conversion include the least chipmunk, black-tailed jackrabbit, mountain cottontail, and pygmy rabbit (Reynolds and Trost 1980). Bock et al. (1993) noted that the relationship between grazing, raptors, and their prey base needs long term research.

Prairie Falcon (*Falco mexicanus*)

Description:

Prairie falcons are a large (20 inch) falcon with a cream colored forehead, a brown "mustache" extending from near the front of the eye down past the bill and a brown patch behind the eye. They have a light to medium brown back, creamy breast and the belly is finely streaked with vertical dark brown marks (Udvardy 1977, Johnsgard 1990). Both sexes of this falcon have dark brown markings in the wing pit area (where the wing attaches to the body on the underside) (Udvardy 1977, Johnsgard 1990). Male and female prairie falcons have the same overall appearance, with the females being more than a third larger than the males (Johnsgard 1990). Prairie falcons are the most common large falcon in the United States. The only other large falcon that has been observed in the Jarbidge Resource Area is the peregrine falcon. Adult peregrine falcons have a dark gray to almost black hood and gray to slate gray back, with more or less horizontal markings on the breast and lack dark wing pits (Peterson 1990, Johnsgard 1990).

Distribution:

The winter distribution for prairie falcons extends from central Mexico northward to southern Washington, central Idaho, and southern Montana (Ehrlich et al. 1988, Johnsgard 1990). Prairie falcons breed from near the Mexican border into southern Canada, from the Cascade Mountains eastward to the western Dakotas and south to west Texas (Udvardy 1977, Johnsgard 1990). Over much of the west prairie falcons are a resident species (Johnsgard 1990). Stephens and Sturts (1991) indicate that prairie falcons are known to breed in the southern half of Idaho and winter over nearly the same area. Prairie falcons are found more concentrated in the Jarbidge Resource Area near the Bruneau River, Jarbidge River, East Fork of the Bruneau, Devil Creek, Cedar Creek, Salmon Falls Creek, and the Snake Rivers. These canyons provide suitable cliffs for nesting.

Habitat:

Johnsgard (1990) describes prairie falcon habitat as sagebrush/grass, desert grassland, or other arid habitats that are typically treeless with nearby cliffs suitable for nesting. Udvardy (1977) and Ehrlich et al. (1988) mentioned open mountains, short grass prairie, and mountain tundra as habitat for prairie falcons.

Biology:

Prairie falcons are yearlong residents in portions of their range. Enderson (1964) noted prairie falcons migrate to the south or to lower elevations during the winter in parts of Canada, Wyoming and Colorado. Prairie falcons generally leave wintering areas in early March (Enderson 1964). Courtship displays begin in the early spring and breeding shortly follows nest site selection (Johnsgard 1990). Little is known about the length of time prairie falcons remain paired, but that it is likely that pair bonds last more than one year (Johnsgard 1990). Enderson (1964) and Johnsgard (1990) reported that nest sites are frequently used for a number of years suggesting that either pair bonds or female nest site fidelity is moderately high. Some eyries are used for several

years by different pairs (Enderson 1964). Female prairie falcons lay 2 to 7 whitish eggs (average 4-5) in a flattened area located on a rock ledge or crevice with an overhang facing open habitat (Ehrlich et al. 1988). Prairie falcons rarely nest in a tree (MacLaren et al. 1984). Incubation lasts 29 to 33 days and the nestlings fledged in 6 weeks (Ehrlich et al. 1988, Johnsgard 1990). Female prairie falcons do the majority of the incubation, but the males incubate while the female forages (Johnsgard 1990). Sherrod (1978) and Squires et al. (1989) reported that prairie falcons consume a variety of birds and small mammals. Prey species are known to include ground squirrels, western meadowlarks, horned larks, vesper sparrows, and other passerine birds (Enderson 1964, Squires et al. 1989). In one study snails were found in the diet of prairie falcons, which the authors speculated may have been to meet calcium needs during egg laying (Squires et al. 1989). Squires et al. (1993) reported that prairie falcons preferred to forage in grassland areas, but would hunt in sagebrush dominated communities when open grasslands were not present. Martin (1987) mentioned that tall dense herbaceous vegetation could hinder the capture of small mammals for some raptors. Johnsgard (1990) noted that small mammals are most commonly eaten in the spring and summer, whereas, birds are more frequently eaten in the late fall and winter (Beauvais et al. 1992). Prairie falcons defend nest sites during nesting. Nest territories are known to be up to 2.4 square miles within an overall home range that can exceed 10 square miles (Johnsgard 1990, Beauvais et al. 1992, Squires et al. 1993). Of the 8 prairie falcon nests found in the Jarbidge Resource Area 7 are on cliffs, but 1 was in a juniper.

Status:

Prairie falcons were placed on the Idaho BLM Sensitive Species list in the fall of 1996. Saab and Groves (1992) indicated that there was not enough data to determine if the population of prairie falcons was increasing or decreasing. Dobkin (1994) commented that prairie falcon populations in Idaho and Montana were currently stable, but there was indication of a long term decline in prairie falcon numbers in the West. Ritter (1996) indicated that there were threats to the breeding range of prairie falcons. Stokes and Stokes (1996) did not present any BBS trend data in the West for this species. Prairie falcons are one of the most common falcons in the Jarbidge Resource Area and nests have been found in all of the major canyon systems.

Threats:

Research has implicated human disturbance and habitat alteration as possible threats to prairie falcons. Enderson (1964) and Squires et al. (1993) commented that human disturbance near the eyries would adversely affect reproduction of prairie falcons. However, Squires et al. (1993) commented that prairie falcons could cope with limited disturbance in foraging areas, if the eyries were undisturbed. In addition prairie falcons nesting at popular rock climbing areas may be affected by human disturbance. There continues to be instances of prairie falcons and other raptors being shot. The alteration of native shrubsteppe habitat to either exotic annual grassland or introduced perennial seedings may impact prairie falcons by altering the prey base (Reynolds and Trost 1980). Reynolds and Trost (1980) found that although western meadowlarks and horned larks increased in numbers in crested wheatgrass seedings, sage thrashers, sage sparrows, Brewer's sparrows, and mourning doves declined. The prairie falcon was not among the species reviewed by Bock et al. (1993) in literature on wildlife/grazing interactions. Bock et al. (1993) noted that the relationship between grazing, raptors, and their prey to be researched.

Flammulated Owl (*Otus flammeolus*)

Description:

Flammulated owls are small (6-7 inches) with dark eyes, indistinct ear tufts, a grayish back, and a lighter belly and reddish and dark gray markings (Peterson 1990, Urdvary 1977). Stokes and Stokes (1996) comment that reddish brown feathers present from the shoulders to the rump form a "V" on a grayish back. Brown feathers are found near the bill, above the eyes, and at the outer edge of the facial disk (Urdvary 1977, Stokes and Stokes 1996). The feet are yellowish (Stokes and Stokes 1996). Flammulated owls could be possibly confused with the more common small owls in this part of Idaho, the saw-whet owl and western screech owl. Saw-whet owls are slightly larger, have yellow eyes, whitish eyebrows, breast, and belly (Peterson 1990). The belly of saw-whet owlso has vertical rusty markings and has more brown on the back (Peterson 1990, Urdvary 1977). Western screech owls have yellow eyes and a gray and black facial disk.

Distribution:

The winter distribution of the flammulated owl is from central Mexico south to Guatemala and El Salvador (Ehrlich et al. 1988). Flammulated owl breed from eastern Washington to northwest Montana south through the Sierra Nevada and Rocky Mountains to Southern California, Arizona, New Mexico and western Texas (Urdvary 1977). Stephens and Sturts (1991) do not show the flammulated owl occurring in southwest Idaho, however, the Jarbidge District of the Humbolt National Forest has reports of flammulated owls north of Jarbidge, Nevada. The Twin Falls District of the Sawtooth National Forest has at least one observation of a flammulated owl near Magic Mountain Ski Hill south of Twin Falls. To date no flammulated owls have been observed within the Jarbidge Resource Area.

Habitat:

Flammulated owls are found in coniferous forests of ponderosa pine (Reynolds and Linkhart 1987a), Douglas-fir and mixed conifers (Howie and Ritcey 1987), and mixed conifer/deciduous forest (McCallum and Gehlbach 1988, Dobkin 1994). Aspen communities are also potential flammulated owl habitat according to Johnsgard (1988). Flammulated owls south of Twin Falls were observed in a lodgepole pine/subalpine fir mixed forest. A flammulated owl was observed near Jarbidge, Nevada in a cottonwood riparian zone.

Biology:

In the southern portion of its range, the flammulated owl may be a year round resident, however, in the northern portion of its range flammulated owls are migratory (McCallum 1994). Migration routes for this species are poorly understood, but are likely influenced by prey availability (McCallum (1994). Following in the spring (late April - early May [McCallum 1994]), male flammulated owls begin calling to attract a mate and to defend their nest territory (Balda et al. 1975). Males arrive before females (Linkart and Reynolds 1987a) and females return to the same nest territory if it was currently occupied by a male. Female flammulated owls locate unpaired territorial males by flying through an area uttering food begging calls (Reynolds and Linkhart

1987a). Courtship or reestablishing pair bonds may take until early June for some flammulated owl pairs (Reynolds and Linkhart 1987a). Unpaired males sang throughout the summer (Reynolds and Linkhart 1987b). Breeding usually occurs after the male feeds the female, then they may preen each other (Reynolds and Linkhart 1987b). Female flammulated owls lay 2 to 4 white to slightly cream colored eggs in a cavity nest in early to mid June (Reynolds and Linkhart 1987b). Male flammulated owls feed the female while she incubates the eggs which hatch in 21 to 24 days (Reynolds and Linkhart 1987b, Johnsgard 1988, McCallum 1994). Young flammulated owls fledge in 22-23 days (Canning and Canning 1982). Young owls begin foraging with the adults about 10 days following fledging and are mostly independent of the adults 5 to 6 weeks later (Linkhart and Reynolds 1987, Johnsgard 1988). Flammulated owls nest in abandoned woodpecker holes, especially those made by northern flickers, pileated woodpeckers, or sapsuckers (Bull and Anderson 1978, McCallum 1994), or natural cavities in snags or live trees (Ehrlich et al. 1988, Johnsgard 1988, Dobkin 1994). Tree species used by nesting flammulated owls include western larch, Douglas-fir, grand fir, ponderosa pine, cottonwood, and aspen (Bull and Anderson 1978, Reynolds and Linkhart 1987b, Johnsgard 1988, McCallum and Gehlback 1988, Dobkin 1994). Reynolds and Linkhart (1987a) found that some flammulated owls reused nest cavities in subsequent years and that males exhibited more fidelity to the nesting territory than females. Flammulated owls diets are nearly all arthropods (moths, beetles, crickets, grasshoppers, spiders, centipedes, caterpillars and other invertebrates) (Reynolds and Linkhart 1987b, Johnsgard 1988, McCallum 1994), but may contain very few small birds and small mammals (Johnsgard 1988, Dobkin 1994). McCallum (1994) writes that consumption of vertebrate prey by flammulated owls is poorly documented. Flammulated owls hunt exclusively at night. They catch insects on the wing or glean them from branches, foliage or occasionally from the ground (Ehrlich et al. 1988, McCallum 1994). Reynolds and Linkhart (1987b) commented that foraging strategies also included hover gleaning and drop-pouncing. Johnsgard (1988) mentioned that young flammulated owls leave their natal area in late summer after the adults stop feeding them and fall migration occurs sometime in late September into October. Reynolds and Linkhart (1987a) hypothesized that male flammulated owls may not be able to gain and defend suitable a breeding territory until the are 2 to 3 years old. Flammulated owls are known to live at least 7 years in the wild (Reynolds and Linkhart 1990).

Status:

In the fall of 1996 this species was added to the Idaho BLM Sensitive Species list. Flammulated owls do not frequently occur on BBS routes. Saab and Groves (1992) could not locate adequate data to determine a population trend for flammulated owls. Dobkin (1994) commented that based on limited data it appeared that flammulated owls are significantly declining. Stokes and Stokes (1996) reported that the trend for flammulated owls was unknown.

Threats:

Habitat fragmentation and the reduction in the size of old-growth forests were considered threats to the habitat of flammulated owls (Mannan and Meslow 1984, Bull et al. 1990). Stands younger than 100 years old or cut over areas are avoided by flammulated owls (Reynolds and Linkart 1987b). Old-growth forest provides this species with the large diameter trees it needs for nest cavities excavated by woodpeckers. Mannan and Meslow (1984) comment that managed forests

under the current rotations will not meet the habitat requirements for most old-growth dependent species. McCallum (1994) writes that silvicultural practices and firewood cutting are threats to the nesting habitat of flammulated owls and that recruitment of snags and healthy woodpecker populations are essential to the conservation of this species. McCallum (1994) comments that the impacts of deforestation of the flammulated owl's winter habitat is unknown. The only potential threat to flammulated owls in the Jarbidge Resource Area is unauthorized firewood cutting in the Jarbidge River Canyons.

Northern Pygmy Owl (*Glaucidium gnoma*)

Description:

Northern pygmy owls are small (7 inches) with yellow feet, eyes, and bill (Johnsgard 1988, Stokes and Stokes 1996). The head and hindneck are brown and speckled with numerous roundish pale tan spots. Two large black spots, highlighted with a light collar, are located on the back of the neck (Udvardy 1977, Peterson 1990, Stokes and Stokes 1996). The flanks and belly of the pygmy owl are whitish with long brown streaks, whereas the chest is nearly solid brown (Peterson 1990, Stokes and Stokes 1996). There are two color phases, gray and red. In both phases the pygmy owls have the markings described above, but tinged gray in the gray phase, whereas the red phase is more cinnamon colored (Johnsgard 1988). Northern pygmy owls lack ear tufts and have a relatively long tail (Johnsgard 1988, Stokes and Stokes 1996). Owls of similar size in the Jarbidge Resource Area include the flammulated owl, screech owl, and saw-whet owl. Flammulated owls have dark eyes, lack the black "eye" marks on the neck, are more gray in appearance including the bill, and ear tufts. Western screech owls are larger, much grayer, lack any light speckling on the head, lack the neck "eye" spots, have a dark gray bill, and have ear tufts. Saw-whet owls are more of a dark or chocolate brown, with a white "V" that extends from the dark bill to over the center of the eyes. Saw-whet owls have light streaks on their head rather than speckles. Saw-whets also have blotchy dark brown marks on a light belly and breast, and lack the "eye" marks on the neck (Peterson 1990).

Distribution:

Johnsgard (1988) depicts the distribution of the northern pygmy owl as extending from British Columbia to western Alberta, south to California and from western Montana along the Rocky Mountains to New Mexico, then south through Mexico and into Honduras. An area across southern Idaho and northern Utah lacks pygmy owl observations (Johnsgard 1988). Stephens and Sturts (1991) showed the northern pygmy owl did not occur in southwestern Idaho, but note that it winters and breeds in many locations in Idaho. Northern pygmy owls have been detected in the South Hills southeast of Twin Falls. This small owl does not appear to migrate.

Habitat:

Ehrlich et al. (1988) list habitats for the northern pygmy owl as open montane coniferous and deciduous forest. Johnsgard (1988) commented that this species was more common in the vicinity of meadows, large openings in forests, and lakes.

Biology:

Although pygmy owls are not considered migrate south for the winter, they are known to move to lower elevations in the winter (Johnsgard 1988). Courtship likely starts in March (Johnsgard 1988). Males call to advertise for a female and defend their territory with a series of monotonous, repetitive hoots or toots (Johnsgard 1988). Other courtship behaviors include: courtship chasing of the female by the male, courtship feeding of the female by the male, and dual vocalizations (Ehrlich et al. 1988). Following courtship, the female lays from 3 to 6 white eggs in the nest (Ehrlich et al. 1988, Stokes and Stokes 1996). Egg laying varies between geographic locations and with elevation, but occurs between late April well into June (Johnsgard 1988). Pygmy owls use old woodpecker nests or natural cavities for nesting (Johnsgard 1988, Stokes and Stokes 1996). The nest hole is usually over 30 feet high in a snag (Bull et al 1987). Bull et al. (1987) reported that northern pygmy owls used old northern flicker and Williamson's sapsucker nest cavities. Nest trees are known to include pine, Douglas-fir, fir, oak, alder, and cottonwood (Bull et al 1987, Johnsgard 1988). Incubation takes about 4 weeks, with the young hatching on different days (Johnsgard 1988, Stokes and Stokes 1996). Nestlings fledge about 4 weeks following hatching (Stokes and Stokes 1996). Northern pygmy owls forage on a variety of prey including small mammals, birds, reptiles, and insects (Gashwiler 1960, Ehrlich et al. 1988, Johnsgard 1988, Stokes and Stokes 1996). Pygmy owls have been documented to prey on California quail which are twice their size (Balgoolyen 1969, Johnsgard 1988). Prey species commonly taken by this owl species include voles, deer mice, shrew, sparrows, and insects. Northern pygmy owls hunt primarily in the morning and evening (Gashwiler 1960, Ehrlich et al. 1988), but have been observed foraging during the day (Johnsgard 1988). Northern pygmy owls hunt by gliding from a perch, then dropping on the prey (Gashwiler 1960, Johnsgard 1988). Northern pygmy owls are known to cache prey for later consumption (Johnsgard 1988). McCallum (1994) commented that in small owls, species which were carnivorous typically were nonmigratory e.g northern pygmy owl, whereas, those that are primarily insectivorous are migratory e.g. flammulated owl. Northern pygmy owls do not appear to have received much attention from researchers.

Status:

Little is known about northern pygmy owls in Idaho. Saab and Groves (1992), Dobkin (1994), and Ritter (1996) did not address the status of this species because it is nonmigratory. Stokes and Stokes (1996) indicated that populations of northern pygmy owls are increasing in the West based on BBS routes. Idaho BLM placed the northern pygmy owl on the Watch list because of the lack of data on this species.

Threats:

Johnsgard (1988) comments that northern pygmy owls are dependent upon woodpeckers to excavate nest cavities. He also speculates that opening up dense stands of forest would benefit this species. There appears to have been no research on the impacts of logging on this species (Hutto et al. 1993). Hutto et al. (1993) did not include the northern pygmy owl as a old-growth forest habitat specialist. Forest management needs to incorporate the needs of this and other cavity nesting species into silvicultural plans, to recruit and maintain snags, and provide habitat

for woodpeckers (McCallum 1994). Grazing impacts to birds in coniferous forests are poorly researched (Bock et al. 1993).

Sage Grouse (*Centrocercus urophasianus*)

Description:

Males are large (4-6 lbs, 26 to 30 inches), mottled gray on the back, have a black belly, and chin, and throat, and a white breast (Udvardy 1977, Johnsgard 1983a). Females are smaller (2-3 lbs, 19 to 23 inches) with a mottled gray back and breast, black belly and some white between the breast and belly (Peterson 1990, Udvardy 1977, Johnsgard 1983). Both species have a relatively long spike-shaped tail which opens when flying. Sage grouse are the largest of the grouse species in the North America (Johnsgard 1983a).

Distribution:

Historically, sage grouse were found throughout the West wherever sagebrush was found (Aldrich 1963). However, sage grouse have been extirpated from British Columbia, New Mexico, Oklahoma, and Nebraska (Aldrich 1963, Johnsgard 1983a). Johnsgard (1983a) noted populations are greatly reduced in Washington, Oregon, California, Arizona, South Dakota, and North Dakota. Idaho, Utah, Nevada, Oregon, Montana, Wyoming and Colorado still hunt sage grouse (Johnsgard 1983a). Stephens and Sturts (1991) indicate that sage grouse are found primarily in the southern half of Idaho. Sage grouse are usually not considered migratory, but are known to travel over 60 miles between seasonal use areas (Dalke et al. 1963). Sage grouse are most commonly found in the southern half of the Jarbidge Resource Area.

Habitat:

Sage grouse are found primarily in sagebrush/grass communities which are essential for winter survival (Dalke et al. 1963, Johnsgard 1983a). Sage grouse do occasionally nest in grassland habitats, but these nests usually fail (Connelly et al. 1991, Klott et al. 1993). Sage grouse avoid aspen and mountain mahogany communities and rarely use mountain shrub habitats (Klott and Lindzey 1990, Klott et al. 1993). Good sage grouse nesting and brood rearing habitat contains adequate sagebrush cover (15- 25%), and a variety of perennial native grasses and forbs (Dalke et al. 1963, Klebenow 1969, Klott et al. 1993). During drought, summers and into the fall, sage grouse tend to congregate near meadows, hay fields, and other areas where there is succulent vegetation and water. During the winter, sage grouse frequent wind swept ridges, south facing slopes, or flats with sagebrush exposed above the snow (Beck 1977, Johnsgard 1983a, Hupp and Braun 1989). Sage grouse seem to avoid deep narrow canyons, but are known to use flat, rolling topography or steep open hills as long as sagebrush cover is present.

Biology:

Sage grouse populations may exhibit two types of movement behavior, resident and migratory behavior. Resident sage grouse remain in the same general area all year long. Migratory sage grouse move considerable distances between breeding, nesting, brood rearing, and wintering areas (Dalke et al. 1963). In March male sage grouse move to leks also called strutting grounds, to display for females and defend a territory (Rothenmire 1979, Johnsgard 1983a, Emmons and Braun 1984). A dominant male on each lek breeds the majority of the females (Johnsgard 1983a).

In the Jarbidge Resource Area females have been observed on leks in early April into May, with the peak of female lek attendance in mid to late April. Males show fairly strong fidelity to a lek (Rothenmire 1979, Emmons and Braun 1984). Males continue to display into late May, although fewer males are usually present during this time. Females show fidelity to nesting areas (Fischer et al. 1993). Females make a 'scrape' type nest usually located under a sagebrush which she may slightly line with grass or sagebrush leaves (Udvardy 1977, Connelly et al. 1991). Female sage grouse lay from 6 to 13, usually 9 or less, olive to cream colored eggs speckled with brown (Ehrlich et al. 1988). Some females, less than 20%, renest if their first nest is unsuccessful (Connelly et al. 1993). In the Brown's Bench area, southwest of Rogerson, no renesting was documented and about 50% of the females did not even make a nesting attempt (Klott et al. 1993). Females incubate the eggs for about 4 weeks and the hatchlings are able to leave the nest soon after hatching (Ehrlich et al. 1988). Sage grouse diets vary seasonally. Young chicks require a high number of insects for the first 10 days (Johnson and Boyce 1990, Drut et al. 1994) then switch to more forbs, grasses, and sagebrush leaves as they age (Klebenow and Gray 1968, Drut et al. 1994). Adult sage grouse eat a variety of foods during the spring and summer, but switch to a diet composed primarily of sagebrush leaves in the fall and winter (Remington and Braun 1985, Ehrlich et al. 1988, Hupp and Braun 1989). Ravens and black-billed magpies are the most common avian nest predators. Mammals that destroy sage grouse nests include ground squirrels, skunks, badgers, and coyotes. Young sage grouse are prey to variety of hawks and eagles.

Status:

Sage grouse were added to the Idaho BLM Sensitive Species list in the fall of 1996. Saab and Groves (1992), Dobkin (1994), and Ritter (1996) did not address population trends for sage grouse, because they did not consider this species to be a migratory landbird. Stokes and Stokes (1996) indicated that BBS data show sage grouse populations were increasing in the West but decreasing along the eastern portion of the range. However, recent Idaho Fish & Game data indicate that sage grouse populations are declining throughout Idaho. Oregon placed sage grouse on its Species of Special Concern list. Sage grouse populations in Colorado and portions of Utah and Montana are reported to be declining. In the Jarbidge Resource Area there are records of over 120 lek locations, but less than one third are still active. Harvest records from a check station near Salmon Falls Creek Dam shows the sage grouse harvest has declined over 80% since the 1950's.

Threats:

In lower precipitation zones reasons for the decline of sage grouse are most likely due to the conversion of native range to exotic grasslands of primarily crested wheatgrass following fire rehabilitation efforts or cheatgrass if the fire is not rehabilitated. Even when sagebrush is included in the fire rehabilitation mix, it may take 10 or more years for the habitat to be suitable for nesting and 20 or more years to support wintering sage grouse. In areas with more precipitation large wild fires still remove sagebrush for long periods of time. Another factor that may influence sage grouse nest success is livestock's consumption of herbaceous cover (Connelly et al. 1991). Grazing utilization levels which are compatible with nesting sage grouse over large areas needs researched. Degradation of meadows, due to heavy grazing, leads to stream entrenchment and a lowered water table which increases shrubs or trees (Vankat and Major 1978), or increases exotic

weeds (Bock et al. 1993). The degradation of meadows has an adverse affect on brood rearing habitat from July into September. Habitat fragmentation has been shown to result in predation on an number of wildlife species (Johnson and Temple 1986, Dobkin 1994). Hunters may also have more of an impact on sage grouse populations in fragmented habitats. Sage grouse numbers seem to be highest in areas where large expanses of native range is least fragmented and degraded.

Black Swift (*Cypseloides niger*)

Description:

Black swifts are nearly all black except for a light marking from the upper mandible to just above the eye (Peterson 1990). Urdvardy (1977) commented that this mark is visible only at close range. Black swifts have a slightly forked tail which is slightly spread during flight (Peterson 1990, Urdvardy 1977). The sexes are similar in appearance and size, which ranges from 7 to 7.5 inches (Urdvardy 1977). Like other swifts the wing shape is rounded or sickle shaped (Urdvardy 1977). The black swift could be confused with the Vaux's swift which is smaller, has a light gray throat, grayish belly, and a rounded tail (Peterson 1990). With the exception of the barn swallow, all of the swallows in the Jarbidge Resource Area have white on the underside. Barn swallows have a brown belly, a bluish black back, and a deeply forked tail.

Distribution:

Winter range is believed to be from Mexico southward to Costa Rica (Urdvardy 1977, Ehrlich et al. 1988). Black swift breeding distribution includes the Pacific Coast from southern Alaska to central California, inland to the Idaho panhandle, northwestern Montana (Hunter and Baldwin 1962, Dobkin 1994) and Alberta (Kondla 1973). Disjunct breeding populations in the Southern Rocky Mountains in Colorado (Knorr 1961) and the Sierra Nevada Mountains of California/Nevada (Urdvardy 1977). Stephens and Sturts (1991) noted that the black swift is a transient in southwestern Idaho, with breeding only occurring north of the Clearwater River in Idaho. Black swifts may have been observed in the Bruneau River Canyon with some white-throated swifts and in the East Fork of the Bruneau Canyon (Clover Creek) with white-throated swifts, cliff and violet green swallows. However, black swift breeding population has not been confirmed within the Jarbidge Resource Area. Based on the habitat descriptions of Knorr (1961) and Hunter and Baldwin (1962), potential nesting habitat for this species is extremely limited in the Jarbidge Resource Area. Potential black swift nesting habitat is limited to riparian canyons along the Nevada-Idaho state line.

Habitat:

Urdvardy (1977), Ehrlich et al. (1988) and Dobkin (1994) describe black swift habitat as steep coastal and mountain cliffs or canyons near water. Hunter and Baldwin (1962) commented that in Montana vegetation adjacent to black swift nesting colonies included Douglas-fir, subalpine fir, Engelmann spruce, willow, dogwood, and juniper. Knorr (1961) wrote that black swift habitat had to have steep (verticle) topography from the nesting colony and unobstructed flyways.

Biology:

Black swifts perform aerial displays and mate while in the air (Ehrlich et al. 1988). Black swifts nest in small colonies of a few pair (Hunter and Baldwin 1962, Dobkin 1994). Nesting in Montana was initiated in mid-June (Hunter and Baldwin 1962). Nests are anchored high in a rock crevice, ledge, shallow cave or behind a waterfall (Hunter and Baldwin 1962, Kondla 1973, Ehrlich et al. 1988, Dobkin 1994). Females lay a single white egg in a shallow saucer shaped nest made of moss, liverworts, grass and algae (Hunter and Baldwin 1962, Ehrlich et al. 1988). Knorr (1961) commented that all of the black swift nesting colonies located in Colorado were near waterfalls or cascades and the water volume at some colonies was very limited. Both parents incubate the egg which hatches in 24 to 27 days (Hunter and Baldwin 1962). Young black swifts fledge in about 45 to 49 days (Hunter and Baldwin 1962, Ehrlich et al. 1988). Black swifts eat insects captured on the wing usually well above ground and aquatic insects emerging from the water surface (Udvardy 1977, Ehrlich et al. 1988, Dobkin 1994). Black swifts forage in loose flocks from the same black swift colony or with other species of swifts or swallows (Udvardy 1977). Udvardy (1977) comments that the adults forage quite a distance from the nest. During storms that last three days or more, they may fly hundreds of miles from the nest to avoid chilling rain. Udvardy (1977) suspects that the young survive without food for a few days by becoming torpid and that the lowered metabolic rate prevents starvation. Black swifts often nest in the same place in subsequent years with a new nest being constructed on the old nest (Ehrlich et al. 1988). Nestling black swifts appear to develop slower than other swifts (Hunter and Baldwin 1962, Stokes and Stokes 1996). Dobkin (1994) noted that the black swift is one of the least known and most elusive of the North American migratory landbirds.

Status:

Black swifts were placed on the Idaho BLM Sensitive Species list in fall of 1996. Saab and Groves (1992) did not comment on the status of black swifts. Dobkin (1994) noted that black swifts are found only on two BBS routes in Idaho and two in Montana. He comments that there is not enough data to determine a population trend in Idaho or the West in general. Ritter (1996) wrote that causes of concern for the black swift were due to decreased winter distribution, threats to winter habitat, low global abundance, and a decrease in breeding distribution. Stokes and Stokes (1996) noted a significant downward trend on BBS routes for black swifts.

Threats:

No specific threats to black swifts or their habitat were listed by Dobkin (1994). However, Hunter and Baldwin (1962) noted that black swifts have a low reproductive rate and low survival rates for the young. There are no references that discuss human disturbance such as recreation on nesting black swifts. Neither Bock et al. (1993) nor Hutto et al. (1993) commented on the impacts of grazing or logging on this species, respectively.

Vaux's Swift (*Chaetura vauxi*)

Description:

A small (4 to 4.5 inches) dark gray brown swift with a paler chin and throat, a gray belly, and a short rounded tail (Udvardy 1977, Peterson 1990, Bull and Collins 1993). Udvardy (1977)

commented that all of the tail feathers end in a bare shaft with a stiff spine that supports this swift while it perches on vertical surfaces. Both sexes are similar in appearance (Udvardy 1977, Peterson 1990). Vaux's swift could be confused with black swifts, even though black swifts are about 3 inches larger, darker, and have a long, slightly forked tail.

Distribution:

The winter distribution of the Vaux's swift occurs from central Mexico south to Venezuela (Ehrlich et al. 1988). Vaux's swift breeding distribution is from the southern part of the Alaska panhandle south to northern California, inland to Alberta and northwest Montana (Udvardy 1977). A disjunct population is found the Sierra Nevada in California/Nevada (Stokes and Stokes 1996). Vaux's swifts breeding north of California are considered migratory (Bull and Collins 1993). In Idaho Stephens and Sturts (1991) indicate that most of the Vaux's swifts breeding occurs north of the Salmon River and considered it transient in the southern part of the state. There are no reports of Vaux's swifts breeding within the Jarbidge Resource Area.

Habitat:

Habitat for Vaux's swift is generally listed as old growth coniferous forest (Bull 1991, Bull and Cooper 1991, Bull and Hohmann 1993) or deciduous forest mixed with coniferous forest (Bull and Collins 1993). Ehrlich et al. (1988) commented that old burns or cut over areas were used if there were a number of suitable snags left for nesting. Suitable nest trees are either snags or hollow, large live trees with a 19 inch diameter at breast height containing woodpecker holes or cavities (Bull and Cooper 1991). Saab and Groves (1992) list coniferous forest as the only habitat, however, Dobkin (1994) notes that in some areas of western Montana Vaux's swifts are found in old cottonwood forests. The only potential habitat for Vaux's swift in the Jarbidge Resource Area is some cottonwood riparian zones along the Jarbidge River.

Biology:

Vaux's swifts arrive in northeastern Oregon in late April and early May (Bull and Collins 1993). Courtship and mating are performed while in flight (Baldwin and Zackowski 1963, Ehrlich et al. 1988). A "V"-glide aerial display has been reported as a courtship display by Vaux's swift (Bull and Cooper 1991, Bull and Collins 1993). Bull and Collins (1993) remark that chasing may also be a part of courtship. Following courtship the Vaux's swifts attach a saucer shaped nest to a wall in an old hollow tree with a woodpecker hole, usually that pileated woodpecker or northern flicker (Baldwin and Hunter 1963, Bull and Cooper 1991). The nest is made from twigs, pine needles, and weed stems which are glued together by saliva (Baldwin and Hunter 1963, Ehrlich et al. 1988, Bull and Cooper 1991, Bull and Collins 1993). Nest building and incubation occurs in June (Bull and Cooper 1991, Bull and Collins 1993). Vaux's swift females lay a clutch of 3-7 white eggs which are incubated about 3 weeks (Baldwin and Zackowski 1963, Ehrlich et al. 1988, Stokes and Stokes 1996). Both sexes brood the young (Baldwin and Zackowski 1963, Bull and Collins 1993). Young Vaux's swifts fledge in about 4 weeks, however, they may climb out of the nest and cling to the side of the cavity after the third week (Baldwin and Zackowski 1963, Ehrlich et al. 1988, Bull and Cooper 1991, Bull and Collins 1993). Both adults feed the young (Bull and Beckwith 1993). The diet of Vaux's swifts consists exclusively of flying insects which are caught on the wing (Udvardy 1977, Dobkin 1994). Bull and Beckwith (1993) and Bull and Collins

(1993) list prey as including flies, ants, bees, aphids, bark beetles, mayflies, moths, beetles, and spiders. Vaux's swift drinks by dipping its beak in water, while flying just above the surface (Bull and Collins 1993). Bull and Cooper (1991) and Bull and Hohmann (1993) report that the majority of the nest trees used in their Oregon study area were grand firs. Nests built over 25 feet above the ground in old pileated woodpecker nests (Bull and Cooper 1991, Bull and Hohmann 1993). Vaux's swifts spend most of their time within 0.25 miles of the nest tree, however, they have been located over 3.3 miles from the nest tree (Bull and Beckwith 1993). During post breeding season, Vaux's swifts are known to roost communally in hollow trees (Bull 1991). Communal roosting is likely influenced by temperature (Bull 1991). Migration southward takes place in autumn (Bull and Collins 1993, Dobkin 1994) and is likely triggered by freezing weather which reduces insect prey.

Status:

Saab and Groves (1992) indicated that there was not enough data to determine a population trend for Vaux's swift. Dobkin (1994) wrote that although the BBS numbers for Vaux's swift are infrequent, the general trend for Idaho, Montana, and the West is declining. Ritter (1996) lists decreases in winter and breeding distribution, as well as an overall low global abundance, as concerns for the long term survival of this species. In contrast Stokes and Stokes (1996) reported an increase in Vaux's swift in the West. This species was added the Idaho BLM's Sensitive Species list in 1996.

Threats:

Because this species depends upon other species (pileated woodpeckers or red-shafted flickers) to excavate cavities, Vaux's swifts appear to be associated with old-growth forests (Bull and Cooper 1991, Bull and Hohmann 1993) and snags (Mannan and Meslow 1984). Continued harvest of these habitats and the removal of snags may result in continued declines of Vaux's swift. Bull and Collins (1993) suggest that silvicultural practices should be modified to provide for large diameter snag recruitment and retention of snags for Vaux's swifts.

Calliope Hummingbird (*Stellula calliope*)

Description:

In hummingbird species, the sexes are similar in size and general appearance, however, male hummingbirds have a brightly colored chin and throat patch called a gorget. Female hummingbirds in Idaho are green backed and whitish on the throat and belly. They have white, green, and rust colored markings in their tails. Calliope hummingbirds are the smallest hummingbirds north of Mexico (Udvardy 1977, Ehrlich et al. 1988) approximately 3 inches in length (Stokes and Stokes 1996). Male Calliope hummingbird gorgets are white striped with a reddish purple (Udvardy 1977, Stokes and Stokes 1996). Females lack the colored gorget (Peterson 1990). Female Calliope hummingbirds are smaller (Ehrlich et al. 1988, Udvardy 1977) than similar looking female rufous and the locally more common female broad-tailed hummingbirds. The females both of these species have a little more rusty coloration on the sides and in the tail than the female Calliope hummingbird.

Distribution:

The winter distribution of the Calliope hummingbird is from northwest Mexico south to central Mexico (Johnsgard 1983b, Tyrrell and Tyrrell 1984, Ehrlich et al. 1988). Its breeding range includes interior British Columbia and Alberta, Canada, south down the Sierra Nevada Mountains to northern Baja California, Mexico, eastward to Montana, Wyoming, and Colorado (Udvardy 1977). Calliope hummingbirds are distributed throughout most of Idaho in the appropriate habitats (Stephens and Sturts 1991). There have been no Calliope hummingbirds documented nesting in the Jarbidge Resource Area. A male Calliope hummingbird was observed performing a display flight near the headwaters of Cedar Creek. This observation in late July may have been of a migrating individual defending a nectar source, or a possible summer resident.

Habitat:

Calliope hummingbirds are more often associated with riparian zones (Ritter 1996) than other Idaho hummingbird species. However, Medin (1990) reported Calliope hummingbirds being present at low numbers in non-riparian habitat. Other habitats where Calliope hummingbirds are found include open conifer forest, aspen, mountain shrub, mountain meadows, and old burns (Armstrong 1987, Ehrlich et al. 1988, Tamm et al. 1989, Saab and Groves 1992, Dobkin 1994, Ritter 1996).

Biology:

Calliope hummingbirds migrate to Idaho in mid to late May (Bent 1940, Johnsgard 1983b, Tyrrell and Tyrrell 1984). Males typically arrive in the breeding areas a week or more prior to the females (Calder and Calder 1994). Tamm et al. (1989) remarked that dive displays in hummingbirds were species specific. Male Calliope hummingbirds perform a more shallow "U" dive display than rufous hummingbirds and are not known to perform an oval display (Johnsgard 1983b, Ehrlich et al. 1988). Other courtship displays performed by Calliope hummingbirds include a circle dance performed by the male and female, hover displays, and buzzing (Tamm et al. 1989). Chasing is used in courtship and also to defend the territory from other Calliope hummingbirds, other hummingbirds and occasionally bumble bees (Tamm et al. 1989, Calder and Calder 1994). Nests are located on horizontal branches with overhanging protection (Calder 1971) and may be made on the nests from the previous year (Ehrlich et al. 1988, Calder and Calder 1994, Dobkin 1994). Eggs are laid in a small cup nest made from moss, leaves, shreds of bark, and cones bundled together with cocoon and spider silk, and lined with plant down (Ehrlich et al. 1988, Calder and Calder 1994). The clutch consists of 2 white eggs (Calder and Calder 1994). The peak of egg laying is likely to be mid June (Brunton et al. 1979). Incubation lasts around 16 days and the young fledge about 3 weeks later (Johnsgard 1983b). Female and male Calliope hummingbirds tend to have separate habitats during the breeding season, with the female more associated with partially wooded areas and the males defending more open areas (Armstrong 1987, Tamm et al. 1989). Males of this species leave the breeding area before the eggs hatch (Calder 1971). The diet of calliope hummingbirds includes nectar (Armstrong 1987), insects, and sap (Calder and Calder 1994). Some insects are captured by gleaning foliage and aerial pursuit (Dobkin 1994). Plants frequently used by foraging Calliope hummingbirds include scarlet glia, larkspur, currant, snowberry, Oregon-grape, columbine, penstemons, and paintbrush (Johnsgard

1983b, Armstrong 1987, Calder and Calder 1994). Calliope hummingbirds begin migration back to wintering areas by late August to early September (Johnsgard 1983b, Tyrrell and Tyrrell 1984) with adult males leaving before females and juveniles (Johnsgard 1983). Tamm et al. (1989) describes the mating system of Calliope hummingbirds as an exploded lek. This implies that the most of females breed with the males with the best food resources which are defended (Tamm et al. 1989). Territory size for Calliope hummingbirds varies from 0.5 to 0.8 acres (Calder and Calder 1994). Tamm et al. (1989) noted 60% of male Calliope hummingbirds show territory fidelity between years. Calder and Calder (1994) reported that banding information from recaptured individuals indicates that the life span of wild Calliope hummingbirds can exceed 5 years.

Status:

Idaho BLM added Calliope hummingbirds to the Sensitive Species list in the fall of 1996. Saab and Groves (1992) found inadequate data to determine the population trend of Calliope hummingbirds. Dobkin (1994) mentioned that populations in the northwest appeared stable, but sample sizes are small. However, Dobkin (1994) reported that Calliope hummingbirds have declined significantly in British Columbia. Ritter (1996) listed concerns for the Calliope hummingbird as decreases in both breeding and winter distribution. According to BBS data for the western United States, Calliope hummingbird populations are increasing (Stokes and Stokes 1996).

Threats:

Mosconi and Hutto (1982) and Bock et al. (1993) mention that Calliope hummingbird numbers are reduced in heavily grazed areas. Season long or summer long grazing in riparian zones, meadows, and under aspen stands reduces the amount of nectar producing plants (Bock et al. 1993). Nectar sources are reduced through plant consumption, trampling of existing vegetation, or in long term shifts in plant species composition. Changing the grazing season from season long to other time periods could make livestock grazing more compatible with this species. Hutto et al. (1993) commented that Calliope hummingbirds responded positively to partially cut timber stands. This positive response could be attributed to a possible increase in nectar producing forbs or shrubs.

Rufous Hummingbird (*Selasphorus rufus*)

Description:

Rufous hummingbirds are relatively large about 4 to 4.5 inches in size (Johnsgard 1983b). Male rufous hummingbirds have brownish backs and sides, a whitish belly, and an orange-red solid colored gorget (Udvardy 1977). In shadows the gorget appears a dark dull brown. Male rufous hummingbirds can not be confused with any other male Idaho hummingbird species (broad-tailed, black-chinned, and Calliope) which all have green backs. Females have a green back and have rusty colored sides and at base of their tail (Udvardy 1977, Peterson 1990). Female hummingbirds are very difficult to identify to species. Female broad-tailed hummingbirds are nearly the same color and size as female rufous hummingbirds.

Distribution:

Rufous hummingbirds winter distribution is in south central Mexico (Udvardy 1977, Tyrrell and Tyrrell 1984). Its summer distribution extends from coastal southern Alaska to northern California, then inland to western Montana and Wyoming (Johnsgard 1983b, Ehrlich et al. 1988). Stephens and Sturts (1991) report that rufous hummingbirds are not known to nest in Idaho south of the Snake River. In the Jarbidge Resource Area a male rufous hummingbird was observed near the head of Lime Creek/House Creek drainages. No nests have been documented in the resource area.

Habitat:

Rufous hummingbirds are usually associated with coniferous forest habitats (Saab and Groves 1992, Dobkin 1994). Gass (1979), Johnsgard (1983b) and Ehrlich et al. (1988) include habitats of brushy slopes and thickets adjacent to meadows. Ritter (1996) added aspen, riparian, and mountain shrub to the plant communities used by rufous hummingbirds.

Biology:

Rufous hummingbirds generally migrate to their breeding range by late April to early May (Gass 1979, Johnsgard 1983b, Tyrrell and Tyrrell 1984), with the males arriving well before the females (Johnsgard 1983b, Ehrlich et al. 1988). Males establish territories and have a display flight that varies between steep "U" to a vertical oval (Johnsgard 1983b, Ehrlich et al. 1988). Other flight displays include whisking (Calder 1993). Rufous hummingbirds are the only hummingbird species in Idaho with an oval flight display. The cup-shaped nest is typically placed on a drooping branch in favorable microclimate located 6 to 16 feet from the ground (Horvath 1964, Johnsgard 1983b). Female rufous hummingbirds are known to use the same nesting territory and reuse or build upon the nest from the previous year (Ehrlich et al 1988, Calder 1993), however, it is not clear if use is by different females (Calder 1993). Female rufous hummingbirds defend larger territories than males (Kodric-Brown and Brown 1978). Males primarily defend food resources as well as nest territories. Nest territories are usually 1 acre or more apart (Calder 1993). Rufous hummingbirds make nests from moss, lichen, leaves, shreds of bark, plant fibers and plant down held together by the silk from caterpillars and spider webs (Johnsgard 1983b, Ehrlich et al. 1988). Female rufous hummingbirds lay 1-3 eggs which they incubate for about 14 days or a little longer (Calder 1993). Rufous hummingbird diets include nectar from flowering plants, sap, insects and spiders. Some insects are taken incidentally with nectar and sap, however, rufous hummingbirds are known to hawk and glean for insects and spiders (Johnsgard 1983b, Paton and Carpenter 1984, Ehrlich et al. 1988). A few of the plants used by rufous hummingbirds for nectar include columbine, mint, penstemon, paintbrush, and scarlet gilia (Calder 1993). During the late summer (August to September) rufous hummingbirds leave their breeding habitat to return to their wintering areas (Gass 1979, Johnsgard 1983b). Rufous hummingbirds are able to enter torpor at time of limited food to save energy and to accumulate fat reserves prior to migration (Hiebert 1991). Male rufous hummingbirds establish and defend foraging territories during migration from all other hummingbirds (Kodric-Brown and Brown 1978, Paton and Carpenter 1984, Ehrlich et al. 1988). Paton and Carpenter (1984) note that rufous hummingbirds deplete nectar resources at the edge of their territories as a method of minimizing raids by other hummingbirds. Paton and

Carpenter (1984) found this strategy was effective during migration. Kodric-Brown and Brown (1978) report that resident hummingbirds require larger territories or more flowers than migrating hummingbirds. Migrating hummingbirds only stay in an area for a short time to build up energy reserves (Kodric-Brown and Brown 1978). During fall migration in August and September rufous hummingbirds are found at higher elevations where hummingbird specialized flowers such as paintbrush are in bloom (Gass et al. 1976, Kodric-Brown and Brown 1978). Calder and Jones (1989) believe that migration routes in rufous hummingbirds are relatively consistent between years. Recaptures of banded individuals suggest that wild rufous hummingbirds live as long as 4 years (Calder 1993).

Status:

In the fall of 1996, Idaho BLM added rufous hummingbirds to the Sensitive Species list. Saab and Groves (1992) reported that the rufous hummingbird had inadequate data to determine a population trend. Dobkin (1994) commented that Breeding Bird Survey data were too sparse, but populations seemed to be declining significantly in the West. Ritter (1996) reported decreases in breeding as well as winter distribution as concerns for this species of hummingbird. Stokes and Stokes (1996) noted rufous hummingbirds were declining in the West.

Threats:

No reasons for rufous hummingbirds population declines were mentioned by Dobkin (1994). Bock et al. (1993) suggest that fire suppression and grazing have altered the herbaceous understory in several plant communities resulting in fewer nectar producing shrubs and forbs. The impacts of logging on rufous hummingbirds are not well documented. However, 10 to 20 year old clear cuts and partially cut areas seem to increase rufous hummingbird numbers (Hutto et al. 1993). Increases in rufous hummingbird numbers are likely due to increased forb cover. Habitats at both breeding areas and along migration routes may both been affected. Changes to winter habitat could also be a factor impacting this species.

Lewis Woodpecker (*Melanerpes lewis*)

Description:

These largish woodpeckers have a black back with a greenish sheen and are 10.5 to 11.5 inches tall. Lewis woodpeckers are about 1 inch or more smaller than the red-shafted flicker. Lewis woodpeckers also have a whitish-gray collar and breast, and a pinkish belly (Bock 1970, Udvardy 1977). The face, cheeks, and chin are red with males and females sharing the same markings (Peterson 1990). Lewis woodpeckers can not be confused with any other Idaho woodpecker. Other black-backed woodpecker species in Idaho are smaller and have white markings on the head or belly

Distribution:

Lewis woodpeckers winter from northern Mexico to southern British Columbia and inland across to Colorado and northern New Mexico. Breeding distribution includes southern British Columbia and Alberta, Canada south to southern California, northern Arizona and New Mexico (Udvardy

1977). Bock (1970) shows that within the range this distribution is quite patchy for both breeding and winter distribution. Stephens and Sturts (1991) indicated few winter occurrences in Idaho, whereas, the breeding distribution for Lewis woodpeckers is throughout most of the state.

Habitat:

Sousa (1983a) and Dobkin (1994) state that Lewis woodpeckers require open forest with a shrubby understory and woodlands. Primary habitats include ponderosa pine, oak, and cottonwood riparian zones. Bock (1970) Ehrlich et al. (1988) noted that Lewis woodpeckers nested in snags in old burned openings and occasionally in pinyon-juniper habitats. In Idaho Lewis woodpeckers have been observed nesting in ponderosa pine, cottonwood, and aspen woodlands. In the Jarbidge Resource Area only two Lewis woodpeckers have been observed. One Lewis woodpecker was observed on a wooden pole north of Three Creek in a Wyoming sagebrush/grass habitat. The second sighting was near Murphy Hot Springs in a cottonwood riparian zone.

Biology:

Lewis woodpeckers return from wintering areas to their breeding habitat Idaho in late April to early May (Bock 1970). Over a large portion of its range Lewis woodpeckers are considered resident species, however, migration by Lewis woodpeckers is believed more typical in Idaho. Unpaired male Lewis woodpeckers advertise for females by giving a churr call which may also function in the defense of the nest tree (Bock 1970). Courtship consists of circle flight, churr calls, and drumming (Bock 1970). Bock (1970) wrote that Lewis woodpeckers may pair for life. Lewis woodpeckers nest in cavities in trees, snags, large dead branches in live trees, and poles (Sousa 1983a, Ehrlich et al. 1988). Nest height varies from 5 feet to 170 feet (Bock 1970). Thomas et al. (1979) believed nest trees needed to be at least 30 feet tall with a 12 inch minimum dbh. Females lay from 4 to 9 white eggs and incubate the eggs 13 to 14 days (Ehrlich et al. 1988). Bock (1970) reported that male Lewis woodpeckers incubate the eggs at night. The young fledge in about 4 to 5 weeks (Bock 1970, Sousa 1983a). The young may continue to beg food and follow the adults until they arrive in their winter habitat (Bock 1970). Male Lewis woodpeckers do not defend a foraging territory, but do defend the nest tree (Bock 1970). Diets of Lewis woodpeckers include caterpillars, emergent woodboring insects, moths, flies, ants, and beetles during the spring and summer (Bock 1970). Lewis woodpeckers hawk insects from the air, glean them from branches and foliage, and pick them ground (Bock 1970, Sousa 1983a, Dobkin 1994). Unlike most other woodpeckers, Lewis woodpeckers rarely probe and chisel for insects (Bock 1970), but appear to prefer areas with a shrubby understory for foraging (Dobkin 1994). Their diet switches to include fruit, nuts, and seeds during the fall and winter (Bock 1970, Sousa 1983a). Lewis woodpeckers cache fruit, large seeds, and nuts in natural crevices during the fall and winter similar to acorn woodpeckers (Hadow 1973, Sousa 1983a). Caches are for individual use and are defended against same or different woodpecker species (Sousa 1983a). Bock (1970) wrote that during migration Lewis woodpeckers were opportunistic and tended to not use specific migration routes, but remain in an area as long as food is available. Fall migration of Lewis woodpeckers from Idaho begins in late August and runs to late October depending on weather and food availability (Bock 1970). Bock (1970) commented that it is not known where Lewis woodpeckers in Idaho, Wyoming or Montana migrate to in the winter. Sousa (1983a) and Hadow

(1973) report that Lewis woodpeckers exhibit a fairly strong fidelity to nesting and wintering areas.

Status:

Lewis woodpeckers were placed on the Idaho BLM Sensitive Species list in the fall of 1996. Saab and Groves (1992) indicated that there were not enough data to determine a population trend for this species. Dobkin (1994) wrote that Lewis woodpeckers are increasingly uncommon in Region 1 of the Forest Service, declining significantly in Montana, and decreasing more slowly in Idaho. Ritter (1996) identified threats to long term survival of this species as decreases in the breeding distribution and its breeding range. Throughout the West BBS routes mark a significant downward trend (Stokes and Stokes 1996).

Threats:

Lewis woodpeckers do not seem to be as dependent upon large trees as other woodpeckers such as the pileated woodpecker (Bull and Meslow 1977, Mannan and Meslow 1984). Possible threats to this species include clear cuts, removal of snags by wood cutters, and perhaps heavy grazing or browsing that depletes shrubs. Bock (1970) commented that Lewis woodpeckers benefitted from openings made in Douglas-fir forests. However, he noted that the disturbance had to contain numerous snags and be at least 10 years old. Hutto et al. (1993) did not address any impacts from logging on Lewis woodpeckers. Bock et al. (1993) classified the Lewis woodpecker as benefitting from grazing. The Jarbidge Resource Area does not authorize any wood cutting and lacks a forestry program. Bock et al. (1993) commented that cavity nesting species would be least likely to be impacted by livestock grazing.

Red-naped Sapsucker (*Sphyrapicus nuchalis*)

Description:

Red-naped sapsuckers are about 8 to 9 inches in length (Udvardy 1977, Stokes and Stokes 1996). The sexes are similar in appearance generally black and white. The head has a red cap, red throat, and a red patch on the back of the head behind a white eye stripe (Udvardy 1977, Peterson 1990, Stokes and Stokes 1996). Another white stripe extends from the upper mandible to down the side of the neck to the breast. The red chin/throat patch is outlined in black, which expands forming a black bib on the upper breast (Udvardy 1988). Red-naped sapsuckers have a black and white horizontal bars on their backs and they have a white wing patch. The belly is pale yellowish and is marked with black on the flanks. Females have a reduced red patch in the throat (Udvardy 1977). Downy and Hairy woodpeckers resemble the red-naped sapsucker. Both of these species have white backs, lack the black bib on the breast, have a black crown and are white under the chin and throat.

Distribution:

Red-naped sapsuckers winter in the southern United States south to Central America (Udvardy 1977, Ehrlich et al. 1988, Stokes and Stokes 1996). Red-naped sapsucker breed throughout the Rocky Mountains from southern British Columbia and Alberta, Canada south to Nevada, northern Arizona and New Mexico (Stokes and Stokes 1996). In Idaho red-naped sapsuckers nest

throughout the entire state (Stephens and Sturts 1991). Stephens and Sturts (1991) commented that there are a few scattered observations of red-naped sapsuckers wintering in southern Idaho.

Habitat:

Red-naped sapsuckers are found in a variety of habitats including mature coniferous forest, aspen woodlands, and willow and cottonwood riparian zones (Crockett and Hadow 1975, Udvardy 1977, Ehrlich et al. 1988, Douglas et al. 1992, Stokes and Stokes 1996). In conifer habitats, these birds are more common along the edges and near openings or clearings (Dobkin 1994). In the Jarbidge Resource Area red-naped sapsuckers have been observed nesting in aspen and cottonwood stands. There has been one observation of a red-naped sapsucker foraging in western juniper. During the winter, red-naped sapsuckers seem to be more of a habitat generalist and uses a wide variety of tree species (Bock and Larson 1986).

Biology:

Red-naped sapsuckers migrate back to the area in the late spring. They return to the same area where they nested the previous year. Although red-naped sapsuckers often return to the same tree, a new cavity is excavated each year (Crockett and Hadow 1975). Nest trees are usually live or dead deciduous trees including aspen, birch, cottonwood, or less frequently larch or rarely conifers (Crockett and Hadow 1975, Ehrlich et al. 1988, Dobkin 1994). Because the red-naped sapsucker is similar in size as the Williamson's sapsucker it likely can use trees over 7 inches dbh for nest cavities. The nest is usually lined with wood chips where the female lays a clutch of 3 to 7 white eggs (Ehrlich et al. 1988). Both males and females incubate the eggs up to 13 days, with the male doing the majority of the night incubating (Crockett and Hadow 1975, Ehrlich et al. 1988). Young sapsuckers fledge about 4 weeks after hatching, are taught sapsucking, and remain dependent upon the adults for only a short period of time after fledging (Ehrlich et al. 1988). Following fledging, adults and young red-naped sapsuckers no longer remain within the nesting territory (Tobalske 1992). Red-naped sapsuckers consume a variety of foods including insects, sap from both conifers and deciduous trees and shrubs, cambium, fruits, and berries (Crockett and Hadow 1975, Bock and Larson 1986, Ehrlich et al. 1988, Dobkin 1994). Insects are gleaned from tree trunks and branches, although flying insects hawked from perches like flycatchers (Dobkin 1994). Red-naped sapsuckers defend sap wells from hummingbirds, warblers, other sapsuckers and chipmunks (Ehrlich et al. 1988). Fruits and berries are consumed most often in the fall and when available during the winter (Bock and Larson 1986). Bock and Larson (1986) commented that red-naped sapsuckers are habitat generalists in the winter. Red-naped sapsuckers will nest in small stands of aspen, less than 1 acres in size (Crockett and Hadow 1975). Dobkin and Wilcox (1986) noted that when sapsuckers are abundant, they are a keystone for all other wildlife that use cavities including house wrens, tree swallows, chickadees, and mountain bluebirds. Red-naped sapsuckers were once considered to be a color variant of yellow-bellied sapsuckers. However, Johnson and Zink (1983) determined that they were a genetically distinct species.

Status:

Idaho BLM included the red-naped sapsucker on its Sensitive Species list in 1996. Saab and Groves (1992) indicated that the data for red-breasted sapsuckers were not adequate to determine

the population trend in Idaho. Dobkin (1994) commented that the trend data were confounded by the split of red-naped sapsuckers from the yellow-bellied sapsucker, but believed that the population was stable. Ritter (1996) reported that red-naped sapsuckers had threats to their winter range, reduced breeding distribution, and a 26 year decline in the breeding population. According to Stokes and Stokes (1996) red-naped sapsucker populations are increasing. Red-naped sapsuckers are one of the more common woodpeckers found in aspen stands in the Jarbidge Resource Area.

Threats:

Finch and Reynolds (1988) identified threats to red-naped sapsucker breeding habitat as logging of mature aspen stands and the invasion of conifers in aspen stands. Tobalske (1992) however, found that small (14 to 35 acres) sized clearcuts or small partial cuts (5 to 40 acres) where adequate snags were left did not differ from unlogged areas in providing sapsucker habitat. Aspen stands are not logged in the Jarbidge Resource Area. Dobkin (1994) mentioned that heavy livestock grazing could damage red-naped sapsucker habitat. Bock et al. (1993) found that there were conflicting reports on the impacts of grazing on red-naped sapsuckers. Heavy livestock grazing can damage willows or other shrubs, aspen or cottonwood habitats. Livestock damage trees and shrubs by trampling the roots, browsing on the new growth on young trees, and trampling or uprooting seedlings (Clary and Medin 1990, Kovalchik and Elmore 1992). Such damage is most likely to occur during heavy season long, or heavy late summer through winter grazing (Clary and Medin 1990, Kovalchik and Elmore 1993). The majority of red-naped sapsucker habitat is grazed from late June through September in the Jarbidge Resource Area. Aspen stands near water receive higher use than aspen stands more than 0.5 miles from water.

Williamson's Sapsucker (*Sphyrapicus thyroideus*)

Description:

Male and female Williamson's sapsuckers are not similar in appearance (Bock and Larson 1986). Both sexes are 8.5 to 9.5 inches (Udvardy 1977). Males have a black head with a white stripe behind the eye. A second white stripe from the upper mandible extends past and below the eye. Males have a black breast, a large white patch on the wings and a white rump, a lemon yellow belly, and they are red from the chin to the throat (Peterson 1990, Stokes and Stokes 1996). Females have a brown head with darker brown whisker marks near the bill (Peterson 1990), but this trait is somewhat variable and lacking in some cases (Stokes and Stokes 1996). Williamson sapsucker females have a brown back with black horizontal bars, are brown under the chin and throat, and have black breast with a yellowish belly. The sides or flanks of the female are brown with black bars (Udvardy 1977, Peterson 1990). The female Williamson's sapsucker could be confused with the female red-shafted flicker. However, female flickers are about 3 inches larger, have a smaller black breast patch with black spots on the belly, and have an orange cast to the underside of the wings when in flight.

Distribution:

Williamson's sapsuckers winter from central Arizona and New Mexico to southwest Texas south into central northern Mexico. This species seems to be a year round resident in the Sierra Nevada Mountains of California and parts of Nevada. Williamson's sapsuckers breed in southern British Columbia and Alberta, Canada, Washington, Oregon, California eastward to western Montana, Wyoming, Colorado, central Arizona and New Mexico (Udvardy 1977). In Idaho the breeding habitat is concentrated in the mountainous areas of central Idaho with fewer known breeding locations in southern Idaho (Stephens and Sturts 1991). No Williamson's sapsuckers have been documented in the Jarbidge Resource Area, however, they are known to be in the adjacent Jarbidge District of the Humbolt National Forest, Nevada. Williamson's sapsuckers have been seen nesting in the South Hills of the Twin Falls District of the Sawtooth National Forest, Idaho.

Habitat:

Williamson's sapsuckers are found in a variety of forested habitats. Sousa (1983b) reported that frequently used forest types include ponderosa pine, Douglas-fir, lodgepole pine, subalpine fir, spruce/fir, and mixed conifer. Crockett and Hadow (1975) and Dobkin (1994) added aspen woodland to the forest types used by Williamson's sapsuckers. Mannan and Meslow (1984) stated that Williamson's sapsucker is associated with old-growth in Oregon, but this species are also found in smaller aspen patches in Colorado (Crockett and Hadow 1975, Sousa 1983). Habitat use during the winter varies between the sexes (Bock and Larson 1986). A few small patches of subalpine fir are present at the very southern end of the resource area and larger expanses of conifer forest are present on the adjacent Humbolt National Forest. Additionally, there are several aspen stands varying from less than 0.5 acres to 30 acres in size which may provide habitat for Williamson's sapsucker.

Biology:

Migrating individuals return from their wintering area in April. Males usually arrive about two weeks before the females (Ehrlich et al. 1988). Excavation of the nest cavity takes from 3 to 4 weeks (Ehrlich et al. 1988). Nests are frequently in the same tree used in the previous year, but, there is no evidence that the same nest cavity is reused (Ehrlich et al. 1988). Females lay 3 to 7 white eggs which hatch in about 2 weeks (Crockett and Hansley 1977, Ehrlich et al. 1988). Both the males and females incubate the eggs, although males incubate during the night (Crockett and Hansley 1977). The young fledge in about 4 weeks and the family separates soon after fledging (Crockett and Hansley 1977, Ehrlich et al. 1988). Crockett and Hadow (1975) noted that although aspens were frequently used as nest trees, the Williamson's sapsucker usually foraged in nearby conifers, primarily ponderosa pine. Sousa (1983b) mentioned that snag tree size varies by tree species for nesting Williamson's sapsuckers. He listed minimum diameters the following trees: aspen 7.1 inches, ponderosa pine 18 inches, and spruce and fir 12 inches. The height of the nest cavity is variable ranging from 8 to 60 feet (Sousa 1983b). Williamson's sapsuckers capture insects by drilling (Dobkin 1994). Williamson's sapsuckers consume primarily ants and insects trapped in sap, sap from fir, hemlock, pine, and aspen, and berries (Ehrlich et al. 1988). More fruit is eaten during the fall and winter with females consuming more fruit than males (Bock and Larson 1986). Males tend to rely more on sap during the winter (Bock and Larson 1986). Although Williamson's sapsuckers exhibit courtship behavior following the dispersal of the young, they are not known to produce a second brood. Williamson's sapsuckers return to their winter

range in the late fall (Bock and Larson 1986). Bock and Larson (1986) also reported that female Williamson sapsuckers tend to be found at lower elevations and in different habitats in the winter than males.

Status:

In the fall of 1996 Idaho BLM included this species to the Sensitive Species list. Williamson's sapsuckers are generally uncommon and there are very few data, but the limited data show a significant decrease in Montana (Dobkin 1994). Saab and Groves (1992) population trend data for Idaho is lacking. Ritter (1996) noted that the breeding distribution has declined. In 1983 Johnson and Zink commented that the Williamson sapsucker was the least common species in the genus *Sphyrapicus*. Stokes and Stokes (1996) showed a significantly increasing population based upon BBS route data.

Threats:

Mannan et al. (1980) and Mannan and Meslow (1984) commented that woodpeckers in general prefer to have large snags for nesting and foraging areas and are typically present in greater numbers in old-growth forests. Managed or logged forests and the removal of snags by woodcutters following logging may impact this species on its breeding range. Because of the high reliance of this species on aspen for nest trees, the removal of aspen could also negatively impact Williamson's sapsuckers. The Jarbidge Resource Area lacks any tracts of pine, fir or spruce forest. No logging or woodcutting is authorized.

Olive-sided Flycatcher (*Contopus borealis*)

Description:

The olive-sided flycatcher is a 7 to 8 inch, stocky flycatcher with no eye-ring and no wing bars (Peterson 1990). It is dark olive gray on the back and sides (Udvardy 1977, Peterson 1990, Stokes and Stokes 1996). The throat and belly are whitish as are cottony tufts that are usually exposed behind the folded wing (Udvardy 1977, Peterson 1990). The general appearance of the sides and breast is of a dark unbuttoned vest (Peterson 1961). Olive-sided flycatchers have a distinctive song that is variously described as "quick three beers" (Peterson 1961) or "whip three beers" (Udvardy 1977). Similar species include the western wood peewee and *Empidonax* flycatchers. The western wood peewee has faint wing bars, no eye-ring, is smaller, and lacks a "vest". All of the Idaho *Empidonax* flycatchers have light or white wing bars and eye-rings, which this species lacks.

Distribution:

Olive-sided flycatcher winter habitat extends from Central America into Columbia, Venezuela and Peru (Udvardy 1977, Ehrlich et al. 1988, Dobkin 1994). Breeding habitat encompasses California, northern Arizona, and New Mexico; then north along the Rocky Mountains to Alaska; eastward along the Boreal Forest in Canada; south to northern Minnesota and New England, and southward along the Appalachian Mountains to Kentucky (Udvardy 1977). In Idaho Stephens and Sturts (1991) indicated that olive-sided flycatchers are believed to breed over all but the

southwestern corner of the state. A male olive-sided flycatcher was heard near Guerry Corrals in the very southern portion of the Jarbidge Resource Area. Because this was an early June sighting it is not known if the male was a transient or had established a breeding territory.

Habitat:

Habitat for olive-sided flycatchers is variously described as montane coniferous forest and riparian woodland (Dobkin 1994), aspen, birch or maple woodland (Udvardy 1977, Finch and Reynolds 1988), and boreal forest or deciduous/coniferous forest with abundant snags (Ehrlich et al. 1988, Finch and Reynolds 1988). Finch and Reynolds (1988) found that olive-sided flycatchers were more strongly associated with spruce/fir forests than other habitats in southern Wyoming and northern Colorado.

Biology:

Male olive-sided flycatchers have been observed in the Jarbidge Resource Area in early June. Aside from their distinctive song, olive-sided flycatchers also have a "pep-pep-pep" call (Stokes and Stokes 1996). Male olive-sided flycatchers pursue the female in courtship flight (Ehrlich et al. 1988). They build a cup type nest usually high in a conifer (Dobkin 1994) on a horizontal branch far from the trunk (Ehrlich et al. 1988). The nest, constructed of twigs, rootlets, lichens and conifer needles, is held in place with cobwebs and lined with lichens and grass (Ehrlich et al. 1988). Female olive-sided flycatchers lay a clutch of 3 to 4 white to buff colored eggs speckled with darker marks (Stokes and Stokes 1996). She incubates the eggs for 14 to 17 days (Ehrlich et al. 1988, Stokes and Stokes 1996). Nestling olive-sided flycatchers fledge in 15 to 23 days (Ehrlich et al. 1988, Stokes and Stokes 1996). Stokes and Stokes (1996) report that this species is known to raise only one brood of young per summer. Olive-sided flycatchers forage exclusively on insects captured in the air by flying from a high perch to which it usually returns (Dobkin 1994). Brown-headed cowbirds rarely lay eggs in olive-side flycatcher nests (Ehrlich et al. 1988). This species of flycatcher vigorously defends its nest from predators and humans (Ehrlich et al. 1988). The olive-sided flycatcher was once placed in the genus *Nuttallornis* (Peterson 1961).

Status:

Olive-sided flycatchers were reported to be declining over its range by Saab and Groves (1992). Dobkin (1994) wrote that numbers were low but appeared to be stable in Montana. However, he noted that in the West as well as across their range in North America olive-sided flycatcher populations have declined significantly. Ritter (1996) listed threats to breeding range, threats to winter range, decreasing winter distribution, and a 26 year declining population trend as downward trends for the olive-sided flycatcher. Stokes and Stokes (1996) concurred with the range wide decline of the olive-sided flycatcher. Idaho BLM in concurrence with the Idaho Department of Fish and Game added this species to the Sensitive Species list in the fall of 1996.

Threats:

Loss of winter habitat in Central America is believed to be one source of the decline in olive-sided flycatchers (Dobkin 1994). One factor impacting olive-sided flycatcher nesting habitat may be fire suppression. Recent research suggests that olive-sided flycatchers may depend upon early post fire habitat with abundant dead trees (Dobkin 1994). Hutto et al. (1993) reported that partial cut

logging benefitted olive-sided flycatchers, whereas, the impacts of clear cutting tended to be neutral. Large clear cuts without adequate snags and leave trees may negatively impact olive-sided flycatcher breeding habitat. Bock et al. (1993) did not refer to any research involving livestock grazing impacts to olive-sided flycatchers.

Cordilleran Flycatcher (*Empidonax occidentalis*)

Description:

Cordilleran flycatchers are 5.5 to 6 inches in length with a bright yellow lower mandible (Ehrlich et al. 1988, Peterson 1990). The throat and belly are yellowish and separated by a light grayish brown breast (Udvardy 1977, Peterson 1990). Cordilleran flycatchers have a whitish eye-ring and 2 light wing bars (Peterson 1990). The diagnostic characteristics that separate the cordilleran flycatcher from others of the *Empidonax* genus in Idaho are that they have more yellow on the throat (dusky and Hammond's lack any yellow on the throat), are slightly more brown in color and have a yellow lower mandible (Udvardy 1977, Peterson 1990). These characteristics are difficult to observe in the field. Stokes and Stokes (1996) stated that the best characteristic to separate the Pacific-slope flycatcher from the Cordilleran flycatcher is the call note which they describe as a, "2 part, up slurred 'sweet-deet'".

Distribution:

Cordilleran flycatchers winter in Mexico (Ehrlich et al. 1988, Dobkin 1994). Cordilleran flycatchers nest in southeastern British Columbia and southwestern Alberta, Canada, then south through eastern Washington and Oregon, Nevada, then eastward to the Rocky Mountains of Montana, Wyoming, Colorado, New Mexico and western Texas (Stokes and Stokes 1996). Stephens and Sturts (1991) noted that although cordilleran flycatchers breed over much of Idaho, they had not been documented in the southwestern part of the state.

Habitat:

Cordilleran flycatchers are found in association with streams in several habitats including montane coniferous forest, dense second growth, aspen, and riparian woodlands (Saab and Groves 1992, Dobkin 1994, Ritter 1996). Dobkin (1994) reported that this species especially favors canyons with riparian woody vegetation.

Biology:

Male cordilleran flycatchers establish a breeding territory soon after arrival from their winter range. If like most other *Empidonax* flycatchers, the female selects the nest site and constructs the nest. Nests are typically in a cavity in a small tree, on a cliff ledge, or on or near the ground in a tangle of roots near a stream (Dobkin 1994). Cordilleran flycatchers make a cup shaped nest out of moss, lichens, rootlets, grass and bark (Ehrlich et al. 1988). Nests are lined with shredded bark, hair, and feathers (Ehrlich et al. 1988). The female lays a clutch of 3 to 5 white to cream colored eggs speckled with brown (Davis et al. 1963, Ehrlich et al. 1988). The eggs hatch in about 2 weeks and the young fledge within 18 days of hatching (Davis et al. 1963, Ehrlich et al. 1988). According to Ehrlich et al. (1988) female cordilleran flycatchers do the brooding. Diet is

primarily of insects which are hawked from the air or taken from foliage or branches by gleaning (Dobkin 1994) or when hovering (Ehrlich et al. 1988). Dobkin (1994) mentioned that cordilleran flycatchers consume berries when available, and less frequently, seeds. Cordilleran flycatchers defend nest territories against Hammond's flycatchers as well as members of their own species (Beaver and Baldwin 1975). Ehrlich et al. (1988) classified cordilleran flycatchers as a rare host for the brown-headed cowbird. The cordilleran and Pacific-slope flycatchers were once considered one species, the western flycatcher, but genetic testing showed they were separate species.

Status:

Saab and Groves (1992) indicated that there was not adequate data to determine a population trend for cordilleran flycatchers. Cordilleran flycatcher numbers have declined sharply in Idaho and are declining less rapidly in Montana (Dobkin 1994), but over their range their population seems stable. Ritter (1996) listed decreases in breeding and winter distribution as factors of concern for cordilleran flycatchers. Stokes and Stokes (1996) mention that cordilleran flycatchers are increasing in the West. In the fall of 1996 the cordilleran flycatcher was added to the Idaho BLM Sensitive Species list.

Threats:

Heavy livestock grazing in the summer or late fall that reduces aspen or woody vegetation in riparian zones could adversely impact nesting and foraging habitat for this species (Dobkin 1994). Bock et al. (1993) did not refer to any research regarding cordilleran flycatchers and livestock grazing. Hutto et al. (1993) noted that partial cut logging did not produce any response in cordilleran flycatcher populations.

Dusky Flycatcher (*Empidonax oberholseri*)

Description:

Dusky flycatchers are about 5.25 to 6 inches in length with a gray back that has a slight olive tinge. They have two whitish wing bars, a narrow white eye-ring, a light gray throat, a buffy breast, and a very pale yellow belly (Udvardy 1977). Males and females are the same in size and appearance (Sedgwick 1993a). Similar species in southern Idaho include the western wood peewee, gray flycatcher, Hammond's flycatcher, and willow flycatcher. Western wood peewees have a prominent peak on the back of their head, lack an eye-ring, are slightly larger, are darker olive gray on the back, and two whitish wing bars. On the underside western wood peewees have a yellowish chin, grayish breast, and yellowish belly (Udvardy et al. 1988, Peterson 1990, Stokes and Stokes 1996). However, the song of the western wood peewee is quite distinct from the dusky flycatcher. Gray flycatchers lack any olive or brown tinge on the back, have a longer bill, a slightly longer tail (Sedgwick 1993a) and are usually closely associated with juniper, pinyon, and sagebrush habitats. The Hammond's flycatcher is essentially the same in appearance as the dusky flycatcher with a little shorter bill and tail (Sedgwick 1993a) and similar song as the dusky flycatcher (Peterson 1990). Hammond's flycatchers are usually found in the upper portion of the forest canopy, whereas, the dusky flycatcher is found closer to the ground. Songs of the dusky

and Hammond's flycatcher are very similar (Peterson 1990) with each having 3 elements, however, Sedgwick (1993a, 1994) describes differences between the songs of the two species. The dusky flycatcher song is described as "prll-it prdrirt pset" (Sedgwick 1993a), whereas, the Hammond's flycatcher is "se-put tsurrt chu-lup" (Sedgwick 1994). Stokes and Stokes (1996) note that the tail of the dusky flycatcher is longer and flips slower than the Hammond's flycatcher. Willow flycatchers are slightly browner than the dusky flycatcher.

Distribution:

Winter distribution of dusky flycatchers encompasses most of central and southern Mexico, (Udvardy 1977, Ehrlich et al. 1988, Sedgwick 1993a) and parts of southern California and Arizona (Sedgwick 1993a). Breeding range extends from inland in the Yukon south to California, Arizona and New Mexico, excluding the coast range along the Pacific (Udvardy 1977, Sedgwick 1993a). Stephens and Sturts (1991) indicated that dusky flycatchers are believed to breed over most of the state where habitat is suitable. Dusky flycatchers are believed to be found only in the southern portion of the Jarbidge Resource Area in aspen woodlands and the few aspen/subalpine fir stands.

Habitat:

Open conifer forest, aspen woodland, willow riparian, shrubsteppe and montane chaparral are habitats used for nesting by dusky flycatchers (Udvardy 1977, Ehrlich et al. 1988, Finch and Reynolds 1988, Sedgwick 1993a, Sedgwick 1993b, Dobkin 1994). Finch and Reynolds (1988) commented that the dusky flycatcher was a potential aspen associate species.

Biology:

Dusky flycatchers arrive from their winter habitat sometime in late April to May (Sedgwick 1993a) and begin nest building in early June (Sedgwick 1993b). Males typically arrive in breeding areas a week before the females (Sedgwick 1993a). Courtship includes solicitation displays by the male and female, as well as chasing, an advertising song, and flight songs by the male (Sedgwick 1993a). Female dusky flycatchers build a cup type nest (Dobkin 1994, Sedgwick 1993a), and the male may assist by bring nest material. Nests are placed in the crotch of an aspen, small conifer, juniper, sagebrush, or ninebark, or at the base of shrubs such as chokecherry, Rocky Mountain maple, alder, willow. Nests are built with weed stems and grass and lined with feathers, shredded grass blades, and hair (Morton and Pereyra 1985, Ehrlich et al. 1988, Sedgwick 1993b). Nests were usually within 6 feet of the ground (Sedgwick 1993b). Nest building takes only a few days, but depending on the weather the female may not begin laying eggs until 2 weeks later (Sedgwick 1993a). Female dusky flycatchers lay 3 to 4 creamy white unmarked eggs in mid June which are incubated for 15 to 16 days after the last egg is laid (Ehrlich et al. 1988, Sedgwick 1993a, Sedgwick 1993b). Incubation may begin after the second egg is laid (Sedgwick 1993b). Morton and Pereyra (1985) and Sedgwick (1993b) report that males were not observed incubating the eggs. Male dusky flycatcher frequently fed the female while she was incubating (Sedgwick 1993b). Only the female brooded the nestlings, although both the male and female dusky flycatcher feed the young (Sedgwick 1993b). Nestlings fledge about 15 to 20 days after hatching (Ehrlich et al. 1988, Sedgwick 1993b). According to Sedgwick (1993a) dusky flycatcher territory size averages about 2 acres. Dusky flycatchers may raise more than 1 brood

during the summer in parts of its range (Stokes and Stokes 1996). Sedgwick (1993b) reported that only single broods were raised in Montana, however, he found some re-nesting attempts were made if the first nest failed. Ehrlich et al. (1988) and Sedgwick (1993) comment that dusky flycatchers will defend their nest territory not only against other dusky flycatchers, but against other species of flycatchers, particularly gray flycatchers. Dusky flycatchers are insectivorous and hawk insects from a perch, or less often hover and glean insects from foliage, branches, or trunks (Ehrlich et al. 1988, Sedgwick 1993a, Stokes and Stokes 1996). Occasionally, insects are taken from the ground (Sedgwick 1993a). Sedgwick (1993a) lists major foods in dusky flycatcher diets during the breeding season as caterpillars, wasps, bees, grasshoppers, moths, butterflies and damselflies. There are no data for the diet during the non-breeding season (Sedgwick 1993a). Based on band recoveries, free ranging dusky flycatchers are known to live at least 8 years (Sedgwick 1993a). Dobkin (1994) mentioned that dusky flycatchers are a host for brown-headed cowbirds. Ehrlich et al. (1988) and Sedgwick (1993b) wrote that dusky flycatchers were an uncommon cowbird host with less than 12% of nests affected. Sedgwick (1993b) noted that brown-headed cowbirds were uncommon or absent in much of his Montana study area. Sedgwick (1993a) wrote that brown-headed cowbird nest parasitism probably occurs where the two species are present, and parasitism likely increases with the higher cowbird numbers. Dusky flycatchers usually begin departing for their winter habitat in August and most of the migration is during the night (Sedgwick 1993a).

Status:

Dusky flycatchers have been undergoing a decline in Idaho (Saab and Groves 1992). However, Dobkin (1994) wrote that numbers appeared to be stable in Idaho and increasing in Montana. Overall based upon the most recent survey results Dobkin (1994) concluded that dusky flycatcher populations were on an upward trend. Concerns with a delimiting breeding distribution and winter distribution were mentioned by Ritter (1996) in the ranking of dusky flycatchers. In the western United States dusky flycatcher numbers are increasing, whereas, they are declining in the central United States based on BBS data (Stokes and Stokes (1996). Dusky flycatchers were added to the Idaho BLM Sensitive Species list in 1996.

Threats:

Habitat fragmentation from logging may make this species more vulnerable to nest parasitism by brown-headed cowbirds (Bollinger and Linder 1994). Based upon the variety of open habitats used, dusky flycatchers are probably not dependent upon old-growth forests, although they may be present at low densities in that habitat type (Mannan and Meslow 1984). Sedgwick (1993a) comments that forestry practices that thin dense stands of conifers or leave small openings are probably beneficial to dusky flycatchers. Finch and Reynolds (1988) noted that conifer invasion of aspen stands could reduce the numbers of aspen associated species including dusky flycatchers. The dusky flycatcher was not among the species addressed by Bock et al. (1993). Livestock grazing that reduces woody vegetation could possibly have an adverse impact on dusky flycatcher habitat (Sedgwick 1993a) because of long-term habitat degradation, but this needs further research. Other potential threats to some dusky flycatcher populations occupying riparian habitats include recreational development and channelization (Sedgwick 1993a).

Gray Flycatcher (*Empidonax wrightii*)

Description:

Gray flycatchers are about 5.5 inches in length (Ehrlich et al. 1988). Like their name implies this species is grayish on the head and back, and whitish on the throat and breast. Lacking are the brown or olive tinges found in the other *Empidonax* species. The lower mandible is flesh colored (Udvardy 1977, Peterson 1990), a characteristic that is not always discernable in the field. Like the other *Empidonax* flycatchers there is a whitish eye-ring and wing bars. In a few areas gray flycatchers may overlap with dusky flycatchers. Dusky flycatchers have an olive cast to the back and a more yellowish tinge on the belly. During breeding season the songs are the easiest separating characteristic. The gray flycatcher's song has 2 elements. The first element is low pitched, emphatic and two syllables, whereas, the second element is a higher pitched, shorter, fainter note (Sedwick 1993a).

Distribution:

The winter range of the gray flycatcher runs from southern California and Arizona south to central Mexico (Udvardy 1977, Ehrlich et al. 1988). Gray flycatcher breeding distribution covers central Oregon south along eastern California, past southern Nevada, east to central New Mexico, then north to Wyoming and southern Idaho (Udvardy 1977). In Idaho gray flycatchers are known to breed south of the Snake River and the desert area near the Idaho Engineering Laboratory (Stephens and Sturts 1991). Observations of gray flycatchers in the Jarbidge Resource area are sparse. Locally, gray flycatchers apparently are not found in the higher elevation (6,500 feet) sagebrush communities.

Habitat:

Gray flycatchers are known to nest in sagebrush/grass and pinyon-juniper habitats (Johnson 1963, Udvardy 1977, Stokes and Stokes 1996), and have been reported occasionally in oak/pine woodland (Ehrlich et al. 1988). In Idaho gray flycatchers are nearly always associated with sagebrush and juniper/sagebrush habitats during the breeding season.

Biology:

Gray flycatchers have been heard in the Jarbidge Resource Area in late May. It is likely that they arrive and establish territories as early as late April. Sedgwick (1993a) notes that the gray flycatcher song consists of two elements. Stokes and Stokes (1996) describe the song as "chawip teeah". Gray flycatchers are known to sing at several locations within their territory, this is similar to the territorial defense of the dusky flycatcher (Sedwick 1993a). Female gray flycatchers probably select the nest site like other *Empidonax* flycatchers. Gray flycatchers construct their cup shaped nests with weed stems, grass, and strips of bark in the crotch of a juniper, sagebrush, or other shrubs (Ehrlich et al. 1988). Stokes and Stokes (1996) commented that gray flycatcher nests are located within a few feet of the ground. Johnson (1963) wrote that gray flycatchers place their nest away from the trunk. Both males and females construct the nest (Johnson 1963). Nests are usually lined with feathers and hair (Ehrlich et al. 1988). A clutch of 3 to 4 whitish eggs is laid which hatches in 14 days (Ehrlich et al. 1988, Stokes and Stokes 1996). Gray

flycatcher nestlings fledge in 16 days (Ehrlich et al. 1988, Stokes and Stokes 1996). Gray flycatchers have been known to produce 2 broods during the breeding season in some areas (Stokes and Stokes 1996). The diet of gray flycatchers is exclusively insects. Gray flycatchers hawk insects from the air, along shrub branches and foliage, and also forage on the ground (Ehrlich et al. 1988, Stokes and Stokes 1996). Territories of gray flycatchers are defended against dusky flycatchers when they occur together (Johnson 1963). Stokes and Stokes (1996) mention that gray flycatchers tend to nest in small loose colonies when there is adequate good habitat.

Status:

Data on gray flycatchers was not adequate enough for Saab and Groves (1992) to determine the population trend. However, by 1996 Ritter reported that there were threats to gray flycatcher breeding range and winter range. She also decreases in the breeding and winter distribution of gray flycatchers. Stokes and Stokes (1996) indicated that the trend for gray flycatcher populations is increasing in the West. Gray flycatchers were added to the Idaho BLM Sensitive Species list in 1996.

Threats:

Past wild fires, sagebrush eradication efforts, and the resulting conversion of sagebrush habitats to crested wheatgrass and annual grasses, has had an adverse impact on this species in parts of Idaho, Nevada, and Oregon. Reynolds and Trost (1981) found gray flycatchers only in sagebrush habitats and none in crested wheatgrass seedings, however, limited sample sizes precluded further analysis. Habitat fragmentation may also be influencing gray flycatcher populations locally and over its range. Gray flycatchers are not commonly detected in the Jarbidge Resource Area. Gray flycatchers were not included in any of the grazing/neotropical bird research reviewed by Bock et al. (1993).

Hammond's Flycatcher (*Empidonax hammondi*)

Description:

Hammond's flycatcher is olive gray on the back, has a light throat, a gray breast, a pale yellowish belly, a narrow white eye-ring and has two wing bars (Peterson 1990). It varies in body size from 5 to 5.5 inches (Udvardy 1977, Peterson 1990). Stokes and Stokes (1996) comment that the tail of the Hammond's flycatcher is shorter than the dusky flycatcher. The breast of the Hammond's flycatcher is supposedly slightly darker and a shorter narrower bill than the dusky flycatcher, however, in the field these differences are not readily apparent (Udvardy 1977, Peterson 1990). Hammond's flycatchers flick their tail and wings more vigorously than the dusky flycatcher (Udvardy 1977). The songs of dusky and Hammond's are also very similar (Peterson 1990). Sedgwick (1993a) described that both species have a three element song, but there were differences. Sedgwick (1993a) described the Hammond's flycatcher song as having a sharper and quicker first element, with a burry second element, and two syllable lower pitched third element. Sedgwick (1994) described the song of the Hammond's flycatcher as "se-put tsurrt chu-lup", but the entire song is usually not sung on a consistent basis. Hammond's flycatchers usually sing only one or two elements of its song over 90% of the time (Sedgwick 1994).

Distribution:

Hammond's flycatchers winter from northern Mexico to Honduras (Udvardy 1977, Ehrlich et al. 1988). Hammond's flycatchers breed from the Sierra Nevada Mountains in California north to southeastern Alaska, including the coastal mountains, east and south along the Rocky Mountains through the Yukon and British Columbia to Alberta, Montana, Wyoming and Colorado. Stephens and Sturts (1991) suggest that Hammond's flycatchers are transitory in southwestern Idaho, but may breed in the South Hills about 30 miles south of Twin Falls. Habitat is suitable for Hammond's flycatchers in the Jarbidge Wilderness of the Humbolt National Forest adjacent to the Jarbidge Resource Area. No Hammond's flycatchers have been confirmed in the Jarbidge Resource Area.

Habitat:

This flycatcher seems to be a nesting habitat specialist that strongly favors intact stands of old-growth forest (200+ years) and mature coniferous forest (100 to 200 years of age) (Dobkin 1994). However, Hammond's flycatchers also can be found in aspen forests (Johnson 1963, Ehrlich et al. 1988, Finch and Reynolds 1988). Udvardy (1977) commented that the Hammond's flycatcher occupies higher altitude forests and the upper canopy.

Biology:

In Idaho Hammond's flycatchers likely arrive in May and early June. Adult males arrive earliest, first year males arrive second, and females arrive last (Sedgwick 1994). Male Hammond's flycatchers defend the nesting territory through intermittent singing at various locations within the territory (Johnson 1963, Sedgwick 1994). Courtship involves flight-song displays, chases (Sedgwick 1994), and solicitation displays by males and females (Johnson 1963). During courtship the female selects the nest site, collects nest materials, and constructs the nest, while the male defends the territory. Males occasionally collect nest material for the female (Sakai 1988). Female Hammond's flycatchers build a cup type nest on a horizontal branch most often in a conifer, but occasionally in a deciduous tree (Ehrlich et al. 1988). Typically, Hammond's flycatchers place their nests on a horizontal branch 25 to 45 feet above the ground (Stokes and Stokes 1996). Nests are assembled from leaves, bark, and grass, then lined with feathers, grass and hair (Ehrlich et al. 1988). Hammond's flycatcher clutches average 3 to 4 eggs (Stokes and Stokes 1996). Eggs of the Hammond's flycatcher are creamy white (Davis 1954, Ehrlich et al. 1988). Incubation takes about 2 weeks and the young fledge nearly 18 days later (Davis 1954, Ehrlich et al. 1988). Female Hammond's flycatchers do all of the incubation and brood the young (Sedgwick 1994). Males of this species feed the female while she incubates and broods the young. Both adults forage to feed the young after about the fifth day following hatching (Sedgwick 1994). Stokes and Stokes (1996) suggest that Hammond's flycatchers may raise more than one brood during the breeding season in some portions of its breeding distribution. Sedgwick (1994) states that this species is only known to renest after their initial nest is lost, but Hammond's flycatchers are not known to produce a second brood if the first was successful. This contradiction maybe due to regional or elevational differences. Hammond's flycatcher are not known to reuse the same nest between years or within the same year (Sedgwick 1994), but they may remove the old nesting material and use the same nest site (Sakai 1988). The diet of the Hammond's flycatcher is

composed exclusively of insects (Ehrlich et al. 1988, Stokes and Stokes 1996). Hammond's flycatchers consume caterpillars, flies, moths, butterflies, wasps and other flying insects (Sedgwick 1994). Hammond's flycatchers fly from an elevated perch to catch flying insects then return to the same perch. Hammond's flycatchers defend their nesting territories against other flycatchers species in the same area (Beaver and Baldwin 1975, Sakai and Noon 1991). Territory sizes for Hammond's flycatchers ranges from 1.5 to 4.0 acres (Manuwal 1970, Sedgwick 1994). Hammond's flycatcher is known to be a host for the brown-headed cowbird (Sedgwick 1993b). However, the rate of brown-headed cowbird nest parasitism has not been well documented and is believed to be infrequent (Sedgwick 1994). Fall migration from breeding areas of Hammond's flycatchers begins in late August to September with them reaching their winter habitat in about 5 weeks (Sedgwick 1994).

Status:

Saab and Groves (1992) noted that Hammond's flycatcher populations were declining. Hammond's flycatchers were also reported to be declining in Montana but apparently stable in other areas (Dobkin 1994). Ritter (1996) listed factors in ranking Hammond's flycatchers as threats to winter range, reduced breeding distribution, and decreased winter distribution. Stokes and Stokes (1996) reported that Hammond's flycatcher populations were decreasing across their range. Hammond's flycatcher was first placed on the Idaho BLM Sensitive Species list in 1996.

Threats:

Sakai and Noon (1991) concluded that the conversion of mature and old-growth forest to young stands adversely impact Hammond's flycatchers. Although Hammond's flycatchers are found in other types of forest types and younger mixed conifer stands, their density is less in these habitats (Hejl and Woods 1991, Dobkin 1994). However, Mannan and Meslow (1984) found similar ratios of Hammond's flycatchers in old-growth and 85 year old thinned stands. Clear cuts or other logging methods that remove nearly all of the timber are not compatible with Hammond's flycatchers (Hutto et al. 1993). Impacts of partial cut logging, such as selective cut or single tree, are not known (Hutto et al. 1993). Stands of trees 100 years old or more, that are intact and greater than 38 acres in size, have more benefit as habitat for Hammond's flycatchers than stands with openings and scattered large trees (Sakai and Noon 1991). The role of habitat fragmentation has not been well documented on this species. Impacts of livestock grazing on Hammond's flycatchers were not discussed in Bock et al. (1993).

Willow Flycatcher (*Empidonax traillii*)

Description:

Willow flycatchers range in size from 5.25 to 6.75 inches (Udvardy 1977). The head and back of willow flycatchers is olive-brown with a grayish breast. The throat is pale yellow and the belly is slightly darker yellow (Udvardy 1977, Peterson 1990). Like the other *Empidonax* flycatchers willow flycatchers have white wing bars and a white eye-ring (Peterson 1990). Peterson (1990) commented that willow flycatchers are the brownest in the genus and slightly larger. The "fitz-

be" song is unique to the willow flycatcher (Udvardy 1977) and is inherited rather than learned (Kroodsma 1984).

Distribution:

Willow flycatcher winter from southern Mexico to Panama (Ehrlich et al. 1988). This species has the widest breeding distribution of the *Empidonax* genus. Its breeding range encompasses the area from southern British Columbia eastward to southern Vermont, south to Virginia, then southwest to Missouri, western Texas, and into northern Mexico, then west to California. It is absent in the coastal mountains of California, but present in coastal Oregon and Washington (Stokes and Stokes 1996). In Idaho Stephens and Sturts (1991) indicated that willow flycatcher breeding range is throughout the state, wherever, there is suitable habitat. Willow flycatchers have been heard along Deer Creek in the southern portion of the Jarbidge Resource Area.

Habitat:

Dobkin (1994) noted that willow flycatchers can be found at all elevations in dense willow thickets and other low dense riparian zones with willows. Douglas et al. (1992) reported that willow flycatchers are very strongly associated with willow riparian zones in most areas. Udvardy (1977) and Dobkin (1994) noted that willow flycatchers could also be found along open woodland margins, scattered shrub thickets, and the edges of mountain meadows. Knopf et al. (1988) considered willow flycatchers to be a willow riparian habitat specialist.

Biology:

Upon return from their winter habitat sometime in late April to May (Brown 1988), the male and female begin courtship (Ehrlich et al. 1988). Courtship includings singing and a courtship chase (Brown 1988). Females willow flycatcher, as well as, males sing during the breeding season (Seutin 1987). Female willow flycatchers select the nest site. A cup type nest is usually built in an upright or slanting fork of a tree or shrub (Ehrlich et al. 1988) from 5 to 15 feet above the ground (Brown 1988). Willow flycatchers make nests out of bark, grass, and weed stems lined with fine grass, hair, plant down or feathers (Ehrlich et al. 1988). Willow flycatchers usually lay a clutch of 4 whitish eggs, which hatch after 12 to 13 days of incubation (Brown 1988, Stokes and Stokes 1996). The nestlings fledge in another two weeks (Brown 1988, Stokes and Stokes 1996). Like some of the other flycatchers, willow flycatchers may raise more than one brood during the breeding season (Brown 1988, Stokes and Stokes 1996). The diet of willow flycatchers is nearly exclusively insects (Barlow and MacGillivray 1983, Ehrlich et al. 1988, Dobkin 1994). Willow flycatchers fly from an exposed perch to capture insect prey in flight, then return to the perch (Stokes and Stokes 1996). They also hover to glean insects from foliage (Ettinger and King 1980, Dobkin 1994). Occasionally, willow flycatchers eat berries or less commonly seeds (Dobkin 1994). Willow flycatcher nests are frequently used by brown-headed cowbirds (Dobkin 1994). Sedgwick and Knopf (1988) reported that willow flycatchers had nearly a 41% rate of nest parasitism by brown-headed cowbirds, whereas, Brown (1988) reported the rate to be 50%. Willow flycatchers respond to brown-headed cowbird nest parasitism by ejecting any cowbird eggs, or covering the eggs with new nest material and laying a new clutch, or abandoning the nest (Brown 1988). Willow flycatchers and alder flycatchers were once grouped into a single species named Traill's flycatcher (Udvardy 1977).

Status:

Willow flycatchers had a slight upward trend (Saab and Groves 1992). Dobkin (1994) reported stable populations of willow flycatchers in Idaho and significantly increasing numbers in Montana. However, portions of the central United States and most of the southwest United States have had downward population trends with the decline being precipitous in recent years (Dobkin 1994). Ritter (1996) noted that willow flycatchers had a high rating for threats to breeding range. Stokes and Stokes (1996) denoted that willow flycatchers are significantly declining throughout their range. The southwestern subspecies of the willow flycatcher is listed as Endangered by the Fish and Wildlife Service in Arizona and New Mexico (Unitt 1987). Willow flycatchers were first added to the Idaho BLM Sensitive Species list in 1996.

Threats:

Declines of willow flycatchers have been attributed to riparian habitat degradation by livestock grazing (Mosconi and Hutto 1982, Taylor 1986, Knopf et al. 1988), heavy parasitism by brown-headed cowbirds (Sedgwick and Knopf 1988), and deforestation of winter habitat (Dobkin 1994). Willow flycatcher breeding populations increase in response to reduction of cattle grazing in riparian zones and termination of willow control in riparian habitats (Taylor 1986, Taylor and Littlefield 1986). Douglas et al. (1992) noted that a number of man's activities including timber harvest, improper grazing, or wetland drainage, could adversely impact the riparian vegetation and the associated bird community.

Swainson's thrush (*Catharus ustulatus*)

Description:

The Swainson's thrush ranges from 6.5 to 7.75 inches in length (Udvardy 1977, Stokes and Stokes 1996). Swainson's thrush is a uniform olive gray brown on the head, back and tail with a buffy colored eye-ring and cheek patch (Peterson 1990). They also have a buffy breast marked with brown spots and white belly (Udvardy 1977, Peterson 1990). Similar species include the veery and hermit thrush (Peterson 1990, Stokes and Stokes 1996). Veeries are not known to occur in the Jarbidge Resource Area. Hermit thrushes have a rusty colored tail and the white eye-ring is much less distinct (Peterson 1990, Stokes and Stokes 1996). The songs of the Swainson's thrush and hermit thrush are superficially similar. Udvardy (1977) and Peterson (1990) commented that the hermit thrush raises and lowers its tail.

Distribution:

Winter distribution of Swainson's thrush extends from central Mexico well into the South America countries of Peru, Bolivia, Paraguay and Brazil (Ehrlich et al. 1988). Breeding range is reported to be from central Alaska eastward through the boreal forest to New Foundland, south through New England and into West Virginia in the Appalachian Mountains (Udvardy 1977). In the Western United States, Swainson's thrushes breed from coastal California northward to Alaska. In Oregon the distribution shifts eastward into northern Nevada, Utah, and Wyoming, then northward to the boreal forest in Canada (Udvardy 1977, Stokes and Stokes 1996). Stephens and

Sturts (1991) denoted that Swainson's thrush breeds over most of Idaho. Swainson's thrush have not been observed in the Jarbidge Resource Area to date.

Habitat:

Udvardy (1977), Mannan and Meslow (1984), Finch and Reynolds (1988), and Saab and Groves (1992) report that Swainson's thrushes occur in a variety of habitats including deciduous and coniferous forests, dense second-growth thickets, old-growth conifer forests, and riparian zones. Swainson's thrush appears to occur at higher densities in spruce/fir forests than aspen forests (Finch and Reynolds 1988). Dobkin (1994) comments that Swainson's thrush needs a shrubby understory and is usually found near water.

Biology:

Males establish a territory soon after arrival from their wintering area in late May to early June (Sealy 1974). Males sing to court females and defend their territory from other Swainson thrush males. A cup type nest is made low in a shrub or less frequently in a conifer (Ehrlich et al. 1988, Dobkin 1994). Nesting materials used by Swainson's thrush include weed stems, rotten wood, bark, twigs, grass and moss. Occasionally, there is a middle layer of mud then the interior is lined with leaves, lichen, rootlets, and plant fibers (Ehrlich et al. 1988). Nests are located frequently on a horizontal branch anywhere from 2 to 20 feet above the ground (Stokes and Stokes 1996), usually in shrubs but occasionally in a small conifer (Dobkin 1994). The clutch size varies from 3 to 5 light blue eggs with brown spots (Stokes and Stokes 1996). Incubation lasts about 14 days and the nestlings fledge in another 14 days. Sealy (1974) wrote that fledging occurred in early to mid July in British Columbia. The Swainson thrush is believed to only raise one brood during the breeding season (Ehrlich et al. 1988). Swainson's thrush uses a variety of foraging strategies to catch insect prey including pouncing of ground insects from a perch, gleaning from foliage and while hovering, gleaning from the ground, and hawking flying insects (Ehrlich et al. 1988, Holmes and Robinson 1988, Dobkin 1994). Prey items are primarily insects, spiders, caterpillars, ground dwelling invertebrates, and small fruits (Dobkin 1994, Stokes and Stokes 1996). Sealy (1974) speculated that competition between Swainson's thrush and hermit thrush were reduced because the nesting times of the two species were different. Young hermit thrushes fledge about 3 weeks before Swainson's thrushes (Sealy 1974). Ehrlich et al. (1988) mentioned that Swainson's thrush nests are only rarely parasitized by brown-headed cowbirds. Cherry (1985) described fall movements of Swainson's thrush. During migration Swainson's thrushes can be found in mixed flocks with warblers feeding in the tree canopy (Cherry 1985, Stokes and Stokes 1996). Dobkin (1994) commented that Swainson's thrushes prefer dense woodlands of all types during migration.

Status:

Idaho BLM has placed the Swainson's thrush on its Sensitive Species list. Swainson's thrush populations were listed as declining by Saab and Groves (1992). Dobkin (1994) mentioned that the Idaho population of Swainson's thrush was declining in Idaho, but seems stable in Montana. He noted an overall slight decline of Swainson's thrush in the West. Ritter (1996) considered a 26 year decline in Swainson's thrush populations and threats to winter habitat in the ranking of this

species. In contrast, Stokes and Stokes (1996) indicated that the BBS data in the West showed a slight population increase, with rapid declines in the central United States.

Threats:

Declines in Swainson thrush numbers in some areas have been linked to loss of winter habitat in Central America and tropical deforestation (Marshall 1988, Morton 1992, Dobkin 1994). In their breeding habitat, Finch and Reynolds (1988) found that Swainson's thrush are closely associated with old-growth mixed conifer forests which have been substantially reduced and fragmented by logging (Tobalske et al. 1991). Mannan and Meslow (1984) did not document any Swainson's thrushes in a thinned forest, but did find this species in old-growth forest. Habitat fragmentation may also lead to increased rates of nest parasitism by brown-headed cowbirds (Gates and Gysel 1978, Temple and Cary 1988, Bollinger and Linder 1994, Dobkin 1994) and nest predation (Wilcove 1985, Martin 1988, Yahner and Scott 1988, Bollinger and Linder 1994).

Black-throated gray warbler (*Dendroica nigrescens*)

Description:

Black-throated gray warblers are about 4.5 to 5 inches in length (Udvardy 1977, Stokes and Stokes 1996). Males have a black-throat, a black cheek patch, a black forehead and a black cap, all separated by white stripes between the black areas. A yellow spot is located between the eye and the bill (Udvardy 1977, Peterson 1990, Stokes and Stokes 1996). Males have a slate gray back. They also have a few black streaks on the upper breast and sides of the breast, two whitish wing bars, and white outer tail feathers (Peterson 1990). Females are dark gray rather than black and lack the black throat patch (Peterson 1990, Stokes and Stokes 1996). Based on its general appearance, the black-throated gray warbler could be confused with the mountain chickadee. However, mountain chickadees have a white stripe above the eye, white cheeks, and are a medium gray on the back. Mountain chickadees also lack wing bars and white outer tail feathers, and have no black streaking on the breast.

Distribution:

Most black-throated gray warblers winter in southern and central Mexico, but the winter range extends north to southern California, Arizona, and New Mexico (Udvardy 1977, Ehrlich et al. 1988). This species' summer distribution is along the Pacific Coast from southern Alaska and British Columbia south to central California, then inland to central Washington, south and east across southern Idaho, and south into the mountains of Nevada Utah, southwestern Colorado, Arizona, and New Mexico (Udvardy 1977). The black-throated gray warbler is at the edge of its geographic breeding range in the southern portion of Idaho (Stephens and Sturts 1991).

Habitat:

Black-throated gray warblers nest in a variety of habitats across their geographic range, including oak scrub, chaparral, shrubby openings in coniferous forests, and pinyon-juniper (Bent 1953, Udvardy 1977, Morrison 1982, Sedgwick 1987, Ehrlich et al. 1988). In the Jarbidge Resource Area, black-throated gray warblers are known to nest in open juniper communities having a

sagebrush understory. Finton and Scott (1984) found black-throated gray warblers nesting in areas with relatively high juniper canopy coverage. They have been observed in mountain mahogany habitats, but nesting in this habitat type has not been confirmed. Specific locations where black-throated gray warblers have been seen include Columbet Creek, Devil Creek, and Brown's Bench.

Biology:

Black-throated gray warblers likely arrive in southern Idaho in May. Males establish territories shortly after arriving, which is typical for most warblers (Morse 1989). No courtship displays are described for this species. Males sing in defense of their territory throughout the nesting period (Bent 1953). Morrison and Hardy (1983) listed three distinct songs for male black-throated gray warblers. Two songs were used for territorial defense and a third softer song was used when a female black-throated gray warbler was near the male (Morrison and Hardy 1983). Nesting occurs in late May and well into June. The nest is a cup woven from grasses and is located in a shrub or tree, usually within 10 feet of the ground (Fitton and Scott 1984, Ehrlich et al. 1988, Stokes and Stokes 1996). Females lay 3 to 5 whitish to cream colored eggs with brownish speckles. Ehrlich et al. (1988) and Stokes and Stokes (1996) noted that little is known about the breeding biology of black-throated gray warblers. Bent (1953) did not identify incubation or fledging periods for black-throated gray warblers. Based on information in Morse (1989) for other warblers, incubation likely takes 11 to 13 days. If typical of other warblers the young fledge after about 8 to 10 days (Morse 1989). Bent (1953) speculated that the female did all of the incubation and brooding, but stated that both parents fed the young. Although adults of some warbler species continue feeding the young several days after fledging (Morse 1989), it is not known if black-throated gray warblers exhibit this behavior. During nesting, the diet of this warbler species is primarily insects. Black-throated gray warblers hawk and glean insects from branches and foliage (Ehrlich et al. 1988, Stokes and Stokes 1996) with very little flycatching (Morrison 1982). Specific prey categories were not listed. Bent (1953) noted that the diet of black-throated gray warblers also included caterpillars. Morrison (1982) found that black-throated gray warblers gleaned about 80% of their foraging time. Male black-throated gray warblers forage higher in trees than do the females (Morrison 1982). Black-throated gray warblers likely migrate from southwestern Idaho in September. Ehrlich et al. (1988) noted that brown-headed cowbirds rarely parasitize the nests of black-throated gray warblers. Information on courtship behavior, territory size, nesting territory fidelity, and longevity for this species are lacking.

Status:

Idaho BLM recently added the black-throated gray warbler to its Sensitive Species list. Saab and Groves (1992) note that there is not enough data to assess whether this species' population is increasing or decreasing. Ritter (1996) listed threats to its breeding range and winter distribution as concerns for black-throated gray warblers. Stokes and Stokes (1996) indicated that the population trends for black-throated gray warblers are slightly up.

Threats:

Little is known about possible threats to black-throated gray warblers. This species was not included in the grazing/neotropical bird studies reviewed by Bock et al. (1993). The expansion of

brown-headed cowbirds into throughout the West may result in increased nest parasitism (Dobkin 1994). In other areas large scale juniper control projects or logging in other habitats may fragment habitat in some areas or result in local declines (Sedgwick 1987). Because of the limited habitat of this species in the Jarbidge Resource Area, it would most likely be affected by fire or chaining of juniper habitat. The Jarbidge Resource Area has no juniper or mountain mahogany treatments planned.

MacGillivray's warbler (*Oporornis tolmiei*)

Description:

MacGillivray's warblers have a gray head. The gray extends from the neck down to the upper breast forming a hood (Peterson 1990). MacGillivray's warblers have an incomplete white eye-ring, an olive green to brownish back, and a yellow belly (Udvardy 1977, Peterson 1990, Stokes and Stokes 1996). Female MacGillivray's warblers are the same size as the males about 4.75 to 5.5 inches, but slightly duller in color (Udvardy 1977). In the Jarbidge Resource Area this is the only songbird with a gray hood and yellow belly. The yellow-breasted chat has a yellow throat and breast, a white belly, and a white eye marking from the upper mandible to the eye. Yellow-breasted chats are also at least 1 inch larger.

Distribution:

MacGillivray's warblers winter from central Mexico and into Panama (Ehrlich et al. 1988, Stokes and Stokes 1996). Breeding habitat extends from the southern Yukon south to central California, southern Nevada, central Arizona, and southern New Mexico (Udvardy 1977). Stephens and Sturts (1991) indicated that MacGillivray's warblers were found in suitable habitat throughout the state. A few MacGillivray's warbler's have been documented in the Jarbidge Resource Area and all were in the southern portion of the area. One was in a riparian zone, Cedar Creek, and the others were in an aspen stand with a shrubby understory along Bear Creek.

Habitat:

Riparian thickets of willow or alder, shrubby edges of coniferous or deciduous forests (Mosconi and Hutto 1982, Mannan and Meslow 1984, Ehrlich et al. 1988, Douglas et al. 1992, Dobkin 1994), as well as, brushy areas from old burns or clear cuts (Morrison 1981, Udvardy 1977) are identified as the main breeding habitats for MacGillivray's warblers. Finch and Reynolds (1988) noted that aspen stands used by MacGillivray's warblers contained either a short or tall shrub understory.

Biology:

MacGillivray's warblers migrate back to the area in the late spring May and June. Pitocchelli (1995) comments that this species is secretive during migration and that there is not data on whether or not males and females migrate together. Males establish territories soon after returning from the wintering area. Pitocchelli (1995) described the MacGillivray warbler's song as "churry churry churry cheery cheery", however, the amount of repetition varies with individuals. If typical of other warblers, the male defends the territory by singing and chasing

other males of the same species from its territory. Pair formation occurs shortly after their arrival in the nesting habitat, but courtship has not been researched (Pitocchelli 1995). Females lay 3 to 6 eggs in a cup shaped nest woven from weed and grass stems, then lined with fine material (Ehrlich et al. 1988, Stokes and Stokes 1996). The eggs are whitish to creamy colored speckled with browns (Ehrlich et al. 1988). Nests are placed either on the ground or low in a shrub (Dobkin 1994, Stokes and Stokes 1996). Shrubs used for nesting are known to include mallow ninebark, thimbleberry, mountain snowberry, twinberry, and willow. MacGillivray's warblers incubate their eggs for about 11 days (Ehrlich et al. 1988, Stokes and Stokes 1996). The young fledge in 8 to 10 days (Ehrlich et al. 1988, Stokes and Stokes 1996). Females are believed to do all of the incubation and brooding (Pitocchelli 1995). Males bring food to the female while she incubates the eggs and broods the young. If like other warblers, after a few days the female also forages for the young. Male and female MacGillivray warblers tend the fledglings (Pitocchelli 1995). Diets of MacGillivray's warblers consist primarily of insects (Hutto 1981a, Morrison 1981) which are gleaned from the foliage low in shrubs, branches and the ground (Hutto 1981b, Dobkin 1994). Pitocchelli (1995) wrote that the diet of this warbler species includes true bugs, leaf hoppers, beetles, bees, wasps, ants, weevils, and caterpillars. MacGillivray's warblers are also known to eat sap from sapsucker wells in willows (Dobkin 1994). Stokes and Stokes (1996) show that MacGillivray's warblers raise only 1 brood per breeding season, but based upon fledging dates renesting following predation is likely. Ehrlich et al. (1988), Dobkin (1994), and Pitocchelli (1995) remarked that the breeding biology of MacGillivray's warbler is poorly researched. MacGillivray warbler territories range in size from 2 to 4 acres during the nesting-fledging period (Morrison 1981a, Blakesley and Reese 1988, Pitocchelli 1995). Stokes and Stokes (1996) mentioned that MacGillivray's warblers hop rather than walk when they move along the ground. Fall migration likely occurs from late August through September (Pitocchelli 1995) in Idaho. Ehrlich et al. (1988) commented that cowbirds rarely parasitize MacGillivray's warbler nests, but this based is upon information from Alberta (Pitocchelli 1995). Hutto (1981a) indicated that MacGillivray warblers defend foraging territories during the winter.

Status:

Saab and Groves (1992) indicated that MacGillivray's warbler populations were slightly up. Dobkin (1994) stated that numbers appeared to be declining in Idaho, but stable in Montana, and slightly down overall in the West. There have been decreases in the breeding distribution, wintering distribution, and a 26 year decline in the population trend for MacGillivray's warblers (Ritter 1996). MacGillivray's warblers are declining in the West and declining more rapidly in the eastern part of their range (Stokes and Stokes 1996). Idaho BLM added the MacGillivray's warbler to the Sensitive Species list in the fall of 1996.

Threats:

Pitocchelli (1995) commented that logging activities that released shrubby understory would likely benefit the MacGillivray's warbler. However, he also commented that planting monocultures of pine trees would likely have a long term detrimental impact on this species. In fragmented or degraded habitats cowbird nest parasitism or nest predation may be greater than in intact habitats, as has been demonstrated for other species (Gates and Gysel 1978, Brittingham and Temple 1983, Johnson and Temple 1990, Bollinger and Linder 1994). Finch (1989), Douglas et al. (1992) and

Dobkin (1994) wrote that MacGillivray's warblers have specialized habitat use or narrow habitat requirements in riparian zones. Finch and Reynolds (1988) found a similar narrow habitat requirement for MacGillivray's warblers in aspen/shrub forests. Mosconi and Hutto (1982) stated that riparian populations are adversely impacted by heavy livestock grazing due to overall habitat degradation. Douglas et al. (1992) commented that improper livestock grazing could alter riparian habitats used by this species. Bock et al. (1993) included the MacGillivray's warbler with those neotropical birds that are negatively impacted by grazing because of the reduction in some shrub species.

Virginia's warbler (*Vermivora virginiae*)

Description: Virginia's warbler is a 4.25 inch grayish songbird with a white belly, throat, and eye-ring (Udvardy 1977, Stokes and Stokes 1996). Males have a rusty patch on their crown, a yellowish breast, and a yellow to yellowish green rump (Stokes and Stokes 1996). This yellowish tint is also on the under tail feathers (Udvardy 1977, Peterson 1990). Females are more gray in appearance and lack the red patch on the crown. Their breast is light gray and the base of the tail is a muted yellow-gray (Peterson 1990). Virginia's warblers could be confused with the more common orange-crowned warbler, which lacks any white and has an eye stripe rather than an eye ring. Overall the orange-crowned warbler is more of a greenish gray. Ruby-crowned kinglets are similar to Virginia's warblers, however, kinglets are smaller, have an incomplete eye ring and have distinct wing bars. Virginia's warblers lack wing bars.

Distribution:

Virginia's warblers winter in southern and central Mexico (Ehrlich 1988). Their breeding range includes eastern California, Nevada, Utah, western Colorado, south to southern New Mexico and Arizona (Udvardy 1977). Stephens and Sturts (1991) indicated that Virginia's warblers are believed to breed in the very southern part of the Idaho, probably near the City of Rocks. In the Jarbidge Resource Area there have been two observations of Virginia's warblers. One observation was in Cedar Draw near Devil Creek and the other observation was near Shack Creek.

Habitat:

Virginia's warblers are known to nest in a variety of habitats including scrub oak, chaparral, and pinyon-juniper (Udvardy 1977, Stokes and Stokes 1996). Bent (1953) and Sedgwick (1987) listed habitats occupied by Virginia warblers as including juniper/pinyon and mountain mahogany with sagebrush and other shrubs. Ritter (1996) lists the primary habitat in Idaho for Virginia's warbler to be juniper. In the Jarbidge Resource Area only two Virginia's warblers have been observed. One observation was in a mountain mahogany community, whereas the second observation was in a western juniper habitat. No nests were detected in either location.

Biology:

Virginia's warblers arrive from their winter habitat in late spring. Arrival times in Nevada and Colorado are late April and early May (Bent 1953). Fischer (1978) reported that Virginia's

warblers arrived by early May in Arizona. The two observations of this species in the Jarbidge were in June. Ehrlich et al. (1988) comment that little is known about the breeding biology of Virginia's warbler. Male Virginia's warblers sing 2 to 3 times from a perch then move to a new perch to sing (Fischer 1978). Courtship includes males singing and chasing the female (Fischer 1978). Morse (1989) notes that male warblers defend a territory and that female warblers likely select the nest site. Bent (1953) reviewed records for Virginia warblers, indicating that they nest on the ground. This warbler makes a cup shaped nest of coarse grass and bark strips lined with fine material with the rim of the cup at ground level (Bent 1953, Ehrlich et al. 1988). Fischer (1978) reported that nests adjacent to clumps of grass were often roofed with grass similar to meadowlarks rather than open. Fischer (1978) commented that the male participates with nest building. It is not known if males help with incubation once the eggs are laid. The female Virginia's warbler lays 3 to 5 eggs (Bent 1953, Stokes and Stokes 1996). Egg color varies from white to creamy and the eggs are marked with reddish brown to brown speckles (Ehrlich et al. 1988, Stokes and Stokes 1996). Days that the eggs are incubated and the days from hatching to fledging are not known, however, many warbler incubate their eggs for 11 to 14 days and typical fledging time is 9 to 14 days (Morse 1989). Male Virginia's warblers help feed the nestlings and remove fecal sacs (Fischer 1978). Stokes and Stokes (1996) remark that Virginia's warblers may raise 2 broods per year, however, at higher elevations only 1 brood per year is raised (Fischer 1978). The Virginia's warbler is insectivorous and gleans insects from the ground or foliage, and hawks flying insects from perches (Ehrlich et al. 1988). Adults also feed their young caterpillars (Bent 1953). Virginia's warblers forage by probing along the ground early in the season and switch to more gleaning late June. Little is known about migration from Idaho, but it is likely to occur in early September and is highly influenced by the weather. Friedmann and Kiff (1985) and Ehrlich et al. (1988) noted that Virginia's warbler is a rare host to brown-headed cowbirds. Fischer (1978) reported that 33% of the nests in her study area had been parasitized by brown-headed cowbirds. Virginia warbler territories vary in size from 2 to 5.5 acres. Information on territory fidelity and longevity for this species is lacking.

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Status:

Virginia's warblers were added to the Idaho BLM Sensitive Species list in the fall of 1996. Saab and Groves (1992) commented that there were inadequate data to determine if Virginia's warbler populations were declining or increasing. Ritter (1996) noted that the winter distribution of Virginia's warblers was decreasing. Stokes and Stokes (1996) commented that BBS data shows an increasing population trend in the West. Virginia's warblers are at the northern edge of their breeding distribution in Idaho.

Threats:

Possible threats to Virginia's warbler habitat include habitat conversion from chaining (Sedgwick 1987), spraying, or prescribed fire and subsequent seeding to exotic grass species. Virginia's warblers could be impacted by habitat conversion because of the loss of overall canopy cover of junipers, pinyon pine, mountain mahogany or oaks and a reductions in foraging areas provided by other shrubs including sagebrush, snowberry, willow, and chokecherry. The invasion of juniper and some other vegetation communities may be partially responsible for the increase in Virginia's warblers. The increase reported by Stokes and Stokes (1996) could also be an artifact of the addition of BBS routes in Virginia's warbler habitats and not a population increase. Bock et al. (1993) did not note any research on the impacts of grazing on Virginia's warbler.

Wilson's warbler (*Wilsonia pusilla*)

Description:

At 4.5 inches Wilson's warblers are slightly smaller than most other warblers and sexes are somewhat similar in appearance (Udvardy 1977, Peterson 1990, Stokes and Stokes 1996). Males are generally bright yellow on the head and belly, with a brownish to olive green on the back (Stokes and Stokes 1996). There is a black patch on the crown (Peterson 1990). Females lack the black crown patch or have a grayish crown patch, lack the bright yellow coloration, and are more olive green to grayish on the back (Udvardy 1977, Stokes and Stokes 1996). Males could be confused with the American goldfinch. Male goldfinches have a black forehead rather than crown, black wings, and white a whitish rump (Peterson 1990, Stokes and Stokes 1996). Females Wilson's warblers are similar to female yellow as well as orange-crowned warblers. Female yellow warblers have yellow tail spots which female Wilson's warblers lack. Female Wilson's warblers are more yellow and have yellow over the bill when compared to more grayish the orange-crowned warbler.

Distribution:

Winter distribution of Wilson's warblers is from Mexico south to Panama (Udvardy 1977, Ehrlich et al. 1988). The breeding range extends from Alaska and the Northwest Territories, across Canada to Nova Scotia, and then south to Maine. In the West breeding habitat extends southward along the California coast eastward through the Rocky Mountains of northern Nevada to Colorado (Udvardy 1977). In Idaho Wilson's warblers are believed to breed in most of Idaho (Stephens and Sturts 1991). Wilson warblers have been seen in Clover Creek, Cedar Creek, and Salmon Falls Creek.

Habitat:

Wilson's warbler habitat is usually willow and riparian thickets as well as brushy patches at the edge of meadows, ponds and boggy areas (Stewart et al. 1977, Morrison 1981, Ehrlich et al. 1988, Finch 1989, Raley and Anderson 1990, Douglas et al. 1992, Dobkin 1994). Finch (1989) commented that Wilson's warblers seemed to be habitat specialists within riparian communities using areas with few trees and dense shrub cover. In eastern Canada they may inhabit moist riparian woods (Ehrlich et al. 1988).

Biology:

Like other warblers, the Wilson's warbler migrates back to its breeding habitat during the spring. In southern Idaho Wilson's warblers have been observed in late May. Males establish territories which are defended by singing. Stewart (1973) described some of the breeding behavior of Wilson's warblers in California. Wilson's warblers are usually monogamous, however, males have been observed with 2 females nesting in their territory (Stewart et al. 1977). The nest is cup shaped and built of dead leaves, grass and moss. It is lined with fine material and usually located on the ground or less frequently low in a shrub (Stewart 1973, Ehrlich et al. 1988, Dobkin 1994). Nests are usually constructed in 5 days (Ehrlich et al. 1988). Females typically lay 4 to 6 eggs, which she incubates for up to 13 days (Stewart 1973, Stewart et al. 1977, Ehrlich et al. 1988). Nestlings fledge in 8 to 12 days (Stewart et al. 1977). Wilson's warblers are not believed to reneest after depredation or raise more than single brood at higher elevations (Stewart et al. 1977), however, reneesting and second broods have been documented in coastal California (Stewart 1973). The diet of Wilson's warblers is primarily insects (Raley and Anderson 1990) with some berries being eaten in the late summer and fall (Dobkin 1994). Insects are caught by gleaning foliage, branches or in flight (Morrison 1981, Raley and Anderson 1990, Dobkin 1994). A wide variety of arthropod adults and larvae were consumed (Raley and Anderson 1990). Both males and females feed the young following hatching, but only the females brood the nestlings (Stewart et al. 1977). Territory sizes vary from less than 1 to nearly 5 acres depending upon the vegetation community (Stewart et al. 1977). Nearly 50% of the male Wilson's warblers banded by Stewart et al. (1977) returned to the same nesting territory the following year, whereas, the rates for females returning to the same territory was lower (Stewart et al. 1977). Females were not found to use the same nest in subsequent years. Wilson's warblers are rarely parasitized by cowbirds (Dobkin 1994). Stewart et al. (1977) observed instances where adult Wilson's warblers did not feed cowbird young and acted aggressively to young cowbirds after their young had fledged. Wilson's warblers are known to start migration southward late in the summer (August and September). Hutto (1981a) suggests that Wilson's warblers defend foraging territories during the winter.

Status:

Saab and Groves (1992) wrote that there was not enough data to determine the population trend for Wilson's warbler. By 1994 Dobkin reported that Idaho populations exhibit a sharp and significant declining trend. Montana populations are also declining (Dobkin 1994), but numbers in the West are relatively stable. Ritter (1996) noted that Wilson's warbler populations has been declining for the past 26 years. Stokes and Stokes (1996) noted that Wilson's warbler populations

were declining across their range based on BBS route data. Idaho BLM has placed the Wilson's warbler on the Sensitive Species list.

Threats:

Wilson's warblers are relatively specialized in the type of riparian habitat used (Raley and Finch 1989, Raley and Anderson 1990, Douglas et al. 1992). Knopf et al. (1988) reported riparian populations are adversely affected by livestock grazing. Because Wilson's warblers are strongly associated with willow riparian communities, management activities that alter or degrade the communities are likely to have adverse effects on this species (Douglas et al. 1992).

Yellow warbler (*Dendroica petechia*)

Description:

Yellow warblers are 4.5 to 5.25 inches in size (Udvardy 1977, Stokes and Stokes 1996). Male yellow warblers have a bright yellow on the breast marked with reddish or rusty streaks (Stokes and Stokes 1996). They also have a yellowish gray back and wings (Udvardy 1977, Peterson 1990). The overall impression is of a bright yellow bird. Male yellow warbler's are the only all yellow bird in Idaho. Other yellowish birds have black markings, such as gold finches (black on head, wings and tail) or Wilson's warbler (black patch on head). Yellow warblers have yellow spots near the tip of their tails, which are not very visible when perching. Females are duller in appearance, but still retain an overall yellow appearance (Udvardy 1977, Peterson 1990). In deciduous vegetation the plumage may take on a greenish cast. Males and females both have two yellowish wing bars. Female yellow warblers can potentially be confused with the females of a number of other warbler species particularly orange-crowned and Wilson's warblers. The females of both species lack yellow spots in the tail (Peterson 1990).

Distribution:

Yellow warblers winter from the Amazon Basin northward to northern Mexico and the Bahamas (Ehrlich et al. 1988). The yellow warbler is the most widely distributed warbler in the United States (Schroeder 1982a) and has been documented breeding in a variety of habitats across its range. Stephens and Sturts (1991) report yellow warblers nest throughout most of Idaho.

Habitat:

In the West yellow warbler's are often associated with deciduous riparian habitats (Douglas et al. 1992, Dobkin 1994). Riparian habitats used by yellow warblers are shrub communities, particularly willows, alder, and birch (Schroeder 1982a, Dobkin 1994). Knopf et al. (1988) considered the yellow warbler a riparian habitat generalist. Yellow warblers are also known to inhabit aspen and cottonwood riparian habitats, but are found less often nesting in aspen or other deciduous woodlands (Dobkin 1994), or coniferous forests (Hebard 1961). Specific areas in the Jarbidge Resource Area where yellow warblers have been documented include Salmon Falls Creek, Cedar Creek, Deer Creek, Flat Creek, Clover Creek, Devil Creek, and the East Fork of the Jarbidge River.

Biology:

Yellow warblers arrive in Idaho occasionally in late April, but more often in May depending on weather conditions. Males begin defending territories soon after arrival. Territory size averages about 0.4 acres for yellow warblers (Kammeraad 1964). Female warblers typically arrive up to two weeks after the males arrive (Morse 1989). Female yellow warblers construct a neat strong cup type nest out of weed stems, shreds of bark, and grass, usually lined with down or feathers (Udvardy 1977, Ehrlich et al. 1988). Nests are usually located within 15 feet of the ground (Schroeder 1982a). After breeding the female lays a clutch of 3 to 6 eggs which she incubates for 11 to 12 days. Eggs are off white to pale green in color with a varied amount of brown-gray spotting or blotching (Ehrlich et al. 1988). The young fledge about twelve days after hatching, but continue to beg food from the parents for a while after fledging (Busby and Sealy 1979). Yellow warblers are known to renest if their first nest fails (Ehrlich et al. 1988), however, they only raise one brood per year (Stokes and Stokes 1996). Yellow warblers feed primarily on a variety of insects, spiders, and other invertebrates, but consume fruit when available in the late summer (Ehrlich et al. 1988, Morse 1989). Males forage higher in trees and shrubs than females (Busby and Sealy 1979). Yellow warbler foraging techniques include gleaning insects from foliage and branches and hawking flying insects (Dobkin 1994). Yellow warblers likely migrate from their breeding habitat in late August through September. Yellow warblers are one of the 3 most frequent hosts of brown-headed cowbirds (Dobkin 1994). Yellow warblers respond to cowbird nest parasitism, when they detect it, by either abandoning their nest or burying the entire clutch under more nest material (Graham 1988).

Status:

Numbers appear to be declining in Idaho (Dobkin 1994). Saab and Groves (1992) and Ritter (1996) report that yellow warbler populations have been declining for the past 26 years. Dobkin (1994) commented that overall in the West yellow warbler populations appear to have stabilized after sharp declines in the previous decades. Yellow warbler populations remain substantially lower than 20 years ago (Dobkin 1994). BBS route data indicates that yellow warbler populations trends are slightly increasing in the West, but decreasing in the Midwest (Stokes and Stokes (1996). Idaho BLM incorporated the yellow warbler into the Sensitive Species list in the fall of 1996.

Threats:

Threats to yellow warblers include habitat fragmentation, habitat conversion, and channel straightening (Dobkin 1994), habitat degradation from drought (Dobkin 1994) or livestock overgrazing (Taylor and Littlefield 1986), and nest parasitism by brown-headed cowbirds (Friedmann and Kiff 1985, Ehrlich et al. 1988, Graham 1988, Dobkin 1994). Morse (1989) commented that changes in winter habitat and along migration routes could also be impacting a number of warbler species. Bock et al. (1993) stated that more research on the impacts of livestock grazing on yellow warblers was needed because the results of existing research was contradictory.

Yellow-headed blackbird (*Xanthocephalus xanthocephalus*)

Description:

Male yellow-headed blackbirds have a yellow head except for a black mask from the eyes to the bill and yellow breast (Peterson 1990). Their belly and back are black, and on the upper wing surface a white patch is visible in flight (Peterson 1990, Udvary 1977, Stokes and Stokes 1996). Female yellow-headed blackbirds are a dull dark brown with a buffy stripe above the eye, a buffy to dirty yellow throat and breast (Peterson 1990). The female lacks white on the wing (Peterson 1990, Udvary 1977). Male yellow-headed blackbirds are not easy to confuse with any other bird in freshwater marsh habitats. Female yellow-headed blackbirds can be separated from female red-winged blackbirds which have a streaked breast and throat. Female Brewer's blackbirds are almost a uniform gray brown on the head, throat, and breast, and darker on the back.

Distribution:

Winter distribution for yellow-headed blackbirds is from the Central Valley in California and southern Arizona south to southern Mexico (Udvary 1977, Ehrlich et al. 1988). In Idaho wintering yellow-headed blackbirds have been reported in several locations, the majority of which are in the Snake River Plain (Stephens and Sturts 1991). Wintering blackbirds in Idaho are often associated with livestock feed lots. Breeding distribution includes inland California north to British Columbia, east to Manitoba, then south to Minnesota and western Texas (Udvary 1977). Stephens and Sturts (1991) indicate that yellow-headed blackbirds are known to breed in all but the mountainous central portion of Idaho. Yellow-headed blackbirds are found in scattered areas primarily along the Snake River where islands or the shore has bulrush or cattails in the Jarbidge Resource Area and at a few scattered wetlands with bulrush further south.

Habitat:

Yellow-headed blackbirds are usually found in freshwater marshes, wetlands or riparian areas with tall emergent vegetation (Udvary 1977, Schroeder 1982b, Ehrlich et al. 1988, Saab and Groves 1992). Tall emergent vegetation is considered to be cattails, bulrush, or reeds. Twedt and Crawford (1995) report that yellow-headed blackbirds also are found in mountain meadows and parklands.

Biology:

Following their return from their wintering area males establish a territory in the emergent vegetation in a marsh. Yellow-headed blackbird males arrive about a week before the females (Twedt and Crawford 1995). Males have been observed near C. J. Strike Reservoir in early May. A number of flight and perched displays were described by Twedt and Crawford (1995) which are involved in courtship, territory defense, nest defense, and predation alert. During courtship a cup type nest is built over water in emergent vegetation. Females select the nest site and construct the nest without assistance from the male (Twedt and Crawford 1995). The nest is anchored by weaving wet vegetation that shrinks as it dries, drawing the nest and supports tight (Ehrlich et al. 1988). Nests are lined with fine grass and construction takes from 2 to 4 days (Ehrlich et al. 1988). The female yellow-headed blackbird lays 3 to 5 grayish white to pale bluish white eggs which she incubates for 11 to 13 days (Ehrlich et al. 1988, Stokes and Stokes 1996). Young yellow-headed blackbirds fledge approximately 12 days after hatching (Ehrlich et al. 1988, Stokes

and Stokes 1996). During breeding season yellow-headed blackbirds forage primarily on aquatic and terrestrial insects, spiders, and to a lesser extent, on grass and forb seeds and agricultural crops (Schroeder 1982b, Twedt et al. 1991, Dobkin 1994). Insects are caught by foraging on the ground, gleaning off vegetation, or hawking. Specific insect prey include ants, diving beetles, beetles, damselflies, flies, dragonflies, and caterpillars (Twedt and Crawford 1995). Their diet shifts in the late summer through the winter to grain, fruit, and other seeds. Nest sites are defended vigorously against other species particularly marsh wrens which may destroy the yellow-headed blackbird's eggs or nest (Bump 1986, Leonard and Picman 1986, Beletsky et al. 1990). Nesting territories are quite small, often less than a 35 foot diameter circle. Oretega and Cruz (1991) found that brown-headed cowbirds rarely use yellow-headed blackbirds as a host, but Dufty (1994) reported that the nest parasitism rate to be as high as 20%. The response to cowbird nest parasitism is usually rejection of the specific egg or nest abandonment (Dufty 1994). Females are known to renest if the first nest destroyed. Second broods have not been documented, if the first clutch fledged (Twedt and Crawford 1995). Yellow-headed blackbirds tend to occur in small to large nesting colonies often adjacent to red-winged blackbirds, but in deeper water (Dobkin 1994, Twedt and Crawford 1995). In the fall and winter, yellow-headed blackbird join in large mixed flocks with red-winged, Brewer's blackbirds, and grackles.

Status:

In 1992 Saab and Groves determined that the population trend for yellow-headed blackbirds was slightly up. However, Dobkin (1994) wrote that yellow-headed blackbird populations were declining in Idaho, but recent surveys show increasing populations over the range of the species. Although recent surveys indicate a slight increase in yellow-headed blackbirds, the 26 year population trend was downward overall (Ritter 1996). Yellow-headed blackbirds are much less common than either the red-wing blackbird or Brewer's blackbird in the Jarbidge Resource Area. Stokes and Stokes (1996) indicated that BBS data for yellow-headed blackbirds show a strong upward trend in the West and Central United States. In 1996 the yellow-headed blackbird was included in the Idaho BLM Sensitive Species list.

Threats:

Wetland degradation and drainage continue to be threats to the habitat for this species. In a few areas of the South and Midwest blackbirds, including yellow-headed blackbirds, cause substantial damage to crops, resulting in limited control measures by Animal Damage Control.

Brewer's Sparrow (*Spizella breweri*)

Description:

Brewer's sparrows are 5 to 5.25 inch pale to medium brown sparrow with an unstreaked sandy colored breast (Ehrlich et al. 1988). Their crown is medium brown in color with fine darker streaking, their back is medium brown that has a mottled appearance, and they have a notched tail (Udvardy 1977, Peterson 1990). The sexes are similar in appearance (Udvardy 1977, Stokes and Stokes 1996). Other sparrows that may occur with Brewer's sparrows in Idaho include the vesper sparrow, lark sparrow, sage sparrow, chipping sparrow, and black-throated sparrow. Vesper

and Stokes 1996). During breeding season yellow-headed blackbirds forage primarily on aquatic and terrestrial insects, spiders, and to a lesser extent, on grass and forb seeds and agricultural crops (Schroeder 1982b, Twedt et al. 1991, Dobkin 1994). Insects are caught by foraging on the ground, gleaning off vegetation, or hawking. Specific insect prey include ants, diving beetles, beetles, damselflies, flies, dragonflies, and caterpillars (Twedt and Crawford 1995). Their diet shifts in the late summer through the winter to grain, fruit, and other seeds. Nest sites are defended vigorously against other species particularly marsh wrens which may destroy the yellow-headed blackbird's eggs or nest (Bump 1986, Leonard and Picman 1986, Beletsky et al. 1990). Nesting territories are quite small, often less than a 35 foot diameter circle. Oretaga and Cruz (1991) found that brown-headed cowbirds rarely use yellow-headed blackbirds as a host, but Dufty (1994) reported that the nest parasitism rate to be as high as 20%. The response to cowbird nest parasitism is usually rejection of the specific egg or nest abandonment (Dufty 1994). Females are known to renest if the first nest destroyed. Second broods have not been documented, if the first clutch fledged (Twedt and Crawford 1995). Yellow-headed blackbirds tend to occur in small to large nesting colonies often adjacent to red-winged blackbirds, but in deeper water (Dobkin 1994, Twedt and Crawford 1995). In the fall and winter, yellow-headed blackbird join in large mixed flocks with red-winged, Brewer's blackbirds, and grackles.

Status:

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sparrows have a streaked breast and white outer tail feathers (Udvardy 1977, Peterson 1990). Sage sparrows have a darker gray head and a dark breast spot with streaking on the side (Udvardy 1977, Peterson 1990). Lark sparrows have rusty colored stripes on their crown and cheek. Lark sparrows also have a breast spot and white tips on the outer tail feathers (Peterson 1990, Stokes and Stokes 1996). Chipping sparrows have a rusty colored crown bordered by white and black eye stripes and a clear grayish breast (Udvardy 1977, Peterson 1990). Black-throated sparrows have a black chin, a black throat, and black on the upper breast with a white eye-stripe and mustache on a dark gray brown head (Udvardy 1977, Peterson 1990, Stokes and Stokes 1996).

Distribution:

The winter range for Brewer's sparrows extends from southern California eastward to western Texas, then south to central Mexico (Udvardy 1977, Ehrlich et al. 1988). Brewer's sparrows are unique in having 2 distinct nesting populations. A northern nesting area is found in alpine meadows of the Yukon, whereas, the second nesting area includes southern British Columbia and Alberta, then south inland of the Cascade Mountain Range to southern California, eastward to northwestern New Mexico, and north to southwestern North Dakota (Udvardy 1977, Short 1984, Dobkin 1994). In Idaho Brewer's sparrow breeding distribution includes the southern half of Idaho with a separate breeding area in the Palouse area (Stephens and Sturts 1991). Brewer's sparrows are fairly wide spread within the Jarbidge Resource Area, wherever sagebrush cover remains. However, Brewer's sparrows seem to be much less abundant at elevations over 6,200 feet.

Habitat:

Brewer's sparrow habitat is generally classified as sagebrush/grass or shrubsteppe (Udvardy 1977, Reynolds 1981, Larson and Bock 1986, Rotenberry and Wiens 1989, Knopf et al. 1990, Medin 1990, Medin 1992). Short (1984) expanded the description to habitats composed primarily of evergreen shrub types or evergreen shrub savannahs to include chaparral communities in California and the alpine shrub meadows in Canada. In sagebrush habitats, Brewer's sparrows do not require that sagebrush dominates the site if other shrubs like rabbitbrush are present (Larson and Bock 1986). However, Reynolds and Trost (1981) reported that the conversion of sagebrush communities to crested wheatgrass seedings eliminated Brewer's sparrow nesting.

Biology:

Brewer's sparrows have been observed in Idaho in early May from their wintering areas. This is about 2 to 3 weeks after sage sparrows arrive. Medin (1992) suggested that Brewer's sparrows arrived after sage sparrows in Nevada. Courtship displays and much of the breeding biology of Brewer's sparrows are still poorly known (Dobkin 1994), however, males sing to defend their territory and to attract a female. Following nest building and breeding the female lays 3 to 5 bluish green brown speckled eggs which she incubates for 11 to 13 days (Reynolds 1981, Ehrlich et al. 1988, Rotenberry and Wiens 1989). The cup type nest is made of grass, rootlets, and forbs lined with finer material (Short 1984). Nests are frequently placed less than 12" above ground in a shrub, usually sagebrush (Best 1972, Schroeder and Sturges 1975, Rich 1980, Reynolds 1981, Short 1984, Petersen and Best 1987). Young Brewer's sparrows fledge in about 8 to 12 days (Reynolds 1981, Petersen et al. 1986, Ehrlich et al. 1988, Rotenberry and Wiens 1989). Petersen

et al. (1986) speculated that weather and/or food impacted the development of nestling Brewer's sparrows. Petersen and Best (1987) commented that Brewer's sparrows showed nesting territory fidelity and returned to the same areas for multiple years. Brewer's sparrows forage on invertebrates, and a variety of seeds. Invertebrates eaten by Brewer's sparrows include spiders, beetles, insects, and caterpillars (Best 1972, Short 1984) which are gleaned from shrub branches and foliage. Insects are consumed during the spring and early summer by both nestlings (Petersen and Best 1986) and adults (Best 1972). Seeds are included in the diet as the summer progresses (Best 1972, Short 1984). The winter diet is nearly exclusively seeds of grasses and forbs (Short 1984, Ehrlich et al. 1988). Short (1984) commented that Brewer's sparrows may satisfy daily water requirements from consumed food. This is supported by Ohmart and Smith (1970) and Dawson et al. (1979) who deprived Brewer's sparrow water for 3 weeks. Both groups of researchers also noted that Brewer's sparrows will readily drink free water when it is available. Ehrlich et al. (1988) commented that Brewer's sparrows frequently bathe in water when it is present. Reynolds (1981) and Rotenberry and Wiens (1989) report that Brewer's sparrow territory size averages from 0.5 to 1.6 acres, and varies between years. Ehrlich et al. (1988) and Dobkin (1994) remarked that nest parasitism by brown-headed cowbirds is uncommon. Based upon limited data, Reynolds (1981) found that brown-headed cowbird nest parasitism occurred at a rate of at least 14%. Brewer's sparrows abandon nests after parasitism by brown-headed cowbirds (Reynolds (1981). Brewer's sparrows commonly flock together with other sparrows during the winter (Cody 1971, Ehrlich et al. 1988).

Status:

Saab and Groves (1992) listed Brewer's sparrow as decreasing significantly. Dobkin (1994) stated that the decline in Brewer's sparrows is steep and significant in Idaho with a significant declining trend over the range of the species. He also noted that the recent surveys suggest continued significant decreases in Brewer's sparrows. A 26 year declining population trend and threats to winter range were mentioned by Ritter (1996) in the ranking of Brewer's sparrow. Based upon BBS data Stokes and Stokes (1996) concluded that Brewer's sparrows were declining throughout their breeding distribution. Brewer's sparrows were added to the Idaho BLM Sensitive Species list in 1996.

Threats:

Perhaps the greatest threat to Brewer's sparrows in its breeding range is the conversion of sagebrush grassland habitats to exotic grasslands (Braun et al. 1976). Best (1972) found a reduction in nesting Brewer's sparrows the year an area was sprayed with herbicide and also reported changes in diet. Schroeder and Sturges (1975) documented the abandonment by Brewer's sparrows of areas sprayed to remove shrub cover two years after treatment. Petersen and Best (1987) reported that prescribed fire reduced Brewer's sparrow numbers for only 2 years. In the area sampled by Petersen and Best (1987) the fire was patchy and had a number of mosaics with only 45% of the shrubland burned. It should also be noted that their area was slightly less than 16 acres in size. Reynolds and Trost (1981) documented that areas converted to crested wheatgrass lacked Brewer's sparrows. In Reynolds and Trost's (1981) study, the plots were located in large stands of either native sagebrush grass habitat or crested wheatgrass seedings. The stands exceeded 248 acres in size (Reynolds and Trost (1981). Data collected in the Jarbidge Resouce

Area shows a lack of Brewer's sparrows in large areas where sagebrush has been removed. However, Brewer's sparrows may occupy small sagebrush islands, 1 acre or more in size, within much larger crested wheatgrass seedings. Brewer's sparrows may respond negatively to grazing (Bock et al. 1993), possibly because of the reduction in seed produced by grazed grasses or because of consumed grass culms by livestock prior to seed set.

Grasshopper Sparrow (*Ammodramus savannarum*)

Description:

Grasshopper sparrows are 4.5 to 5.25 inches long with short tails (Udvardy 1977, Peterson 1990). They have an unstreaked buffy breast, a whitish belly, and a light stripe bordered by two broader dark stripes on the crown (Udvardy 1977, Peterson 1990, Stokes and Stokes 1996). A light colored eye stripe is present just above the eye that begins slightly yellowish then quickly changes to whitish (Udvardy 1977). The back has a striped appearance (Peterson 1990). The savannah sparrow and vesper sparrow may occur in the same area with grasshopper sparrows in Idaho. Both of these species have streaked breasts (Peterson 1990, Stokes and Stokes 1996). However, the savannah sparrow has a yellowish stripe above the eye and a notched tail, whereas, the vesper sparrow has a white eye-ring and white outer tail feathers (Peterson 1990). The songs of savannah sparrows and grasshopper sparrows are similar.

Distribution:

Ehrlich et al. (1988) and Udvardy (1977) wrote that the winter distribution of grasshopper sparrows extends from southern California eastward to Georgia, and south to Central America and northern South America. Grasshopper sparrows have a very large breeding distribution which includes central Washington, south to southern California, then east to Florida and north to southern New York, and across the southern parts of the Plains Provinces of Canada (Udvardy 1977, Ehrlich et al. 1988). A gap occurs in the distribution grasshopper sparrows over the Rocky Mountains (Stokes and Stokes 1996). Grasshopper sparrows have only been observed in the northern portion of the Jarbidge Resource Area, southeast of Bruneau and south of Glens Ferry.

Habitat:

Although the primary habitat for grasshopper sparrows is prairie, Dobkin (1994) lists grassland of all types at low elevation as habitat for grasshopper sparrows. Udvardy (1977) and Ehrlich et al. (1988) also mention agricultural crops, such as grains and alfalfa, as habitat for grasshopper sparrows. Johnson and Temple (1986) noted that there was higher nest success for grasshopper sparrows in grasslands that had been not grazed or burned. Grasshopper sparrows have only been detected in well rested or lightly grazed crested wheatgrass seedings in the Jarbidge Resource Area.

Biology:

Upon arrival from the wintering area, usually in early May, male grasshopper sparrows establish a territory (Wiens 1973). Singing males have been detected in late May in the Jarbidge Resource Area. Males perform a low fluttering courtship flight either quietly or while singing, and the

female answers the singing with a trill (Ehrlich et al. 1988). The male grasshopper sparrow may also chase the female while singing (Ehrlich et al. 1988). Wiens (1973) noted that the peak of breeding occurred in mid June in Wisconsin and may occur a little earlier in southern Idaho. A cup type nest is placed on the ground in a depression within dense or over hanging vegetation (Johnson and Temple 1990, Dobkin 1994). Grasshopper sparrows construct the nest from dried grass which is lined with finer material (Ehrlich et al. 1988). Three to six creamy white eggs marked with reddish brown speckles are laid by the female (Ehrlich et al. 1988, Stokes and Stokes 1996). The eggs are incubated for about 12 days and the nestlings fledge in another 9 days (Ehrlich et al. 1988). Males defend the nesting territory until the eggs hatch, then territory defense declines (Ehrlich et al. 1988). Grasshopper sparrows are known to produce 2 broods during the summer in some areas (Ehrlich et al. 1988, Stokes and Stokes 1996). Grasshopper sparrows forage on a variety of invertebrates and seeds (Dobkin 1994). Joern (1988) reported that grasshopper sparrows were able to change their foraging behavior to adapt to changes in their habitat. Johnson and Temple (1990) reported brown-headed cowbirds parasitized about 7% of the grasshopper sparrow nests in Minnesota. Ehrlich et al. (1988) wrote grasshopper sparrows often nest semi-colonially in small groups of 3 to 12 pairs. It is not known when grasshopper sparrows migrate from the Jarbidge Resource Area. Unlike a number of other sparrows, grasshopper sparrows do not form flocks during the winter (Ehrlich et al. 1988).

Status:

Idaho BLM placed the grasshopper sparrow on the Sensitive Species list in 1996. Population trend was not determined for grasshopper sparrows by Saab and Groves (1992) because of a lack of data. Dobkin (1994) described a steady decline in grasshopper sparrows in the West with a sharp significant decline range wide. A 26 year population decline and threats to breeding habitat were considered to be the major factors by Ritter (1996) in establishing the rank for the grasshopper sparrow. Data from western and central United States populations are significantly declining and a subspecies in Florida is listed as "Endangered" by the Fish & Wildlife Service (Stokes and Stokes 1996).

Threats:

Grasshopper sparrows are a grassland species that prefer ungrazed to lightly grazed pastures (Dobkin 1994, Bock et al. 1993). Bock et al. (1993) report that heavy grazing is detrimental to nesting grasshopper sparrows, because of the loss of herbaceous vegetation and litter to conceal a ground nest. The few observations of grasshopper sparrows in the Jarbidge Resource Area were in crested wheatgrass seedings that had either been rested the previous year or had only been lightly grazed. So called "wolfy" bunchgrasses in our area seem to serve as singing perches (Wiens 1973) or provide the best cover for a ground nest. Johnson and Temple (1990) stated that in the Midwest prairie vegetation should probably be burned every 3 years to maintain quality nesting habitat for grasshopper sparrows and that tree rows should be removed to reduce nest predation. Additionally, Johnson and Temple (1990) found that grasshopper sparrows nesting in fragmented habitat had higher rates of nest predation and brown-headed cowbird nest parasitism.

Sage Sparrow (*Amphispiza belli*)

Description:

Sage sparrows have a dark brown to grayish head, a light outline of the cheek that crosses above the eye, grayish brown back and wings, a whitish underside with streaking on the sides, and a small dark brown to black spot on the breast (Udvardy 1977, Peterson 1990). Udvardy (1977) and Stokes and Stokes (1996) add that a dark mustache, white eye stripe and white eye-ring are other diagnostic features of sage sparrows. Other sparrows in the same habitat as sage sparrows include vesper sparrow, Brewer's sparrow, black-throated sparrow, and lark sparrow. Vesper sparrows have a streaked breast and white outer tail feathers. Brewer's sparrows lack a breast spot, and are lighter in color on the back. Black-throated sparrows have a black chin, a black throat and a black upper breast, with white eye and "mustache" stripes. Although lark sparrows have a black breast spot and dark mustache, they differ by having a rusty head with white stripes in the center of the head, above the eye, and above the mustache. The song of each species is quite distinctive. Black-throated sparrows are much less common in the Jarbidge Resource Area than sage sparrows.

Distribution:

Winter distribution of sage sparrows extends from southern California east to central New Mexico and south into northern Mexico (Udvardy 1977, Ehrlich et al. 1988). Breeding distribution for sage sparrows covers central Washington, east to Wyoming, south to northern New Mexico, then west to southern California. Stephens and Sturts (1991) note that the breeding distribution for Idaho is generally the Snake River Plain. Sage sparrows are present over much of the Jarbidge Resource Area where expanses of sagebrush are present. Tall Wyoming sagebrush over 30 inches are used for singing perches. Black sagebrush and low sagebrush habitats do not appear to provide suitable habitat for this species.

Habitat:

Sage sparrow habitat is described as consisting of sagebrush, arid brushland, chaparral, and shrubsteppe (Udvardy 1977, Reynolds 1981, Ehrlich et al. 1988, Wiens et al. 1990, Dobkin 1994). Larson and Bock (1986) commented that sage sparrows were selective for dense sagebrush. However, Rotenberry (1986) and Wiens et al. (1986) found that sage sparrows returned to the same area even after it had burned.

Biology:

Sage sparrows have been heard as early as late April in the Jarbidge Resource Area. Sage sparrows have not been detected during sage grouse lek counts in late March. Medin (1992) reported that sage sparrows were present in Nevada as early as April 1. Sage sparrows usually build a cup type nest of twigs, forbs, and grass lined with fine material low in a sagebrush (Reynolds 1981, Petersen and Best 1987, Ehrlich et al. 1988). However, sage sparrows will infrequently nest in other shrubs or on the ground (Winter and Best 1985, Petersen and Best 1987). Females lay a clutch of 2 to 4 bluish eggs blotched with browns which are incubated for 13 to 16 days (Reynolds 1981, Ehrlich et al. 1988, Rotenberry and Wiens 1989). Nestling sage sparrows fledge in about 11 days (Petersen et al. 1986, Ehrlich et al. 1988, Rotenberry and Wiens 1989). Growth of nestlings is influenced by weather and the amount of food the young receive

(Peterson et al. 1986). Stokes and Stokes (1996) indicated that sage sparrows may produce 2 clutches during the breeding season. Sage sparrows ingest a variety of foods including spiders, insects, and seeds (Ehrlich et al. 1988, Dobkin 1994). Sage sparrows forage on the ground as well as glean insects from the foliage on shrubs (Dobkin 1994). Sage sparrows exhibit strong fidelity to nesting territories and returned to the same area even after shrubs were removed by fire (Weins et al. 1986, Petersen and Best 1987). These areas were structurally different than the previous year (Wiens et al. 1986, Petersen and Best 1987). Long term nesting success of sage sparrows in this situation is poorly documented for a large area. Territory size for sage sparrows average 1 to 5 acres in size, and territory size was found to vary between years (Rotenberry and Wiens 1989). Rotenberry (1986) noted that sage sparrows are rarely found in areas of the Great Basin that lack sagebrush. Reynolds (1981) noted the sage sparrows abandon nests after being parasitized by brown-headed cowbirds. Reynolds (1981) stated that the rate of nest parasitism was about 29% in southeastern Idaho at the Idaho National Engineering Laboratory.

Status:

Saab and Groves (1992) denoted a lack of data to determine a population trend for sage sparrows. Dobkin (1994) mentioned a declining sage sparrow population trend in Idaho based on a small sample size and a declining trend in sage sparrows range wide. Ritter (1996) considered major decreases in breeding and winter distribution in ranking sage sparrows a priority species in Idaho. Sage sparrow populations are declining across their range (Stokes and Stokes 1996). Sage sparrows were added to the Idaho BLM Sensitive Species list in 1996.

Threats:

In parts of the West substantial amounts of native sagebrush/grass communities have been converted to either exotic annual grasslands or exotic perennial grasslands. Braun et al. (1976) commented that the conversion of sagebrush/grass habitats was detrimental to the long term survival of sage sparrows. Reynolds and Trost (1981) did not document any sage sparrow nesting in crested wheatgrass seedings. Locally, well over 700,000 acres of sagebrush/grass habitat on land administered by the Jarbidge Resource Area has burned since the mid 1970's. This has resulted in sage sparrow habitat being converted from native range to exotic plant communities of primarily crested wheatgrass seedings or annual grasslands. Long term threats to sage sparrows within the Jarbidge Resource Area is the continued loss of habitat from increasing fire size and frequency. Areas that are converted to either annual grasslands or crested wheatgrass seedings do not appear to support sage sparrows after the first 4 years following a fire. Bock et al. (1993) listed the sage sparrow as likely to be benefitted from grazing, because of a likely increase in shrub cover.

Green-tailed Towhee (*Pipilo chlorurus*)

Description:

Green-tailed towhees are a 6.25 to 7 inch bird with a rusty colored cap, white throat and forehead, dark gray "mustache", light gray breast, and whitish belly (Peterson 1990, Udvardy 1977). The back of the green-tailed towhee is medium gray with a yellow greenish cast to the tail and wings

(Peterson 1990, Udvardy 1977). Green-tailed towhees are not easily confused in appearance with any other species in Idaho. Peterson (1990) noted that the song of the green-tailed towhee can be confused with the fox sparrow. The song of the spotted towhee, formerly rufous-sided towhee, is similar to the green-tailed towhee and both species have a "mew" call, but their appearance quite distinctive. Spotted towhee have orange sides, black head and throat, white belly, an orange eye, and white in the tips of the tail feathers

Distribution:

Green-tailed towhees winter in southern California east to southern Texas and south to central Mexico (Udvardy 1977, Ehrlich et al. 1988). The breeding distribution is bounded by southern Washington, east to eastern Montana, south through Wyoming to New Mexico, and westward to central California. Stephens and Sturts (1991) note few winter observations of green-tailed towhees in Idaho. However, they indicate that the breeding distribution extends diagonally across Idaho from the Owyhee County to the northeast to Lemhi County.

Habitat:

Udvardy (1977) describes green-tailed towhee habitat as sagebrush, mountain chaparral, pinyon juniper and thickets bordering alpine meadows. However, Medin (1992) reported that green-tailed towhees were located only infrequently in Wyoming big sagebrush/grass communities. Ehrlich et al. (1988) and Saab and Groves (1992) noted that green-tailed towhees are found along riparian zones and any mountain shrubland. Knopf et al. (1990), Medin (1990) and Dobkin (1994) wrote that green-tailed towhees are found in areas with a mixture of shrubs, including mountain big sagebrush, mountain snowberry, chokecherry, and commonly with mountain mahogany.

Biology:

Green-tailed towhees arrive in Idaho in late April to early May. Dobkin (1994) commented that green-tailed towhee breeding biology has not been well studied. Ehrlich et al. (1988) does not address any courtship or other displays. Males typically sing from on top of the tall shrubs in their territory. Medin (1990) reported that male green-tailed towhees defended territories in May in Nevada. Females lay 2 to 5 white eggs speckled with brown in a cup type nest made of grass, bark, and twigs and lined with hair or other fine material (Ehrlich et al. 1988, Stokes and Stokes 1996). The green-tailed towhee nests found in the Jarbidge Resource Area were found low in sagebrush and rabbitbrush which is similar to the nesting of green-tailed towhees in Nevada (Medin 1990). Udvardy (1977) and Dobkin (1994) described nest placement as on the ground or low in chaparral, juniper or other shrubs. The incubation period has not been documented, but other towhees incubate eggs for 11 to 13 days (Ehrlich et al. 1988, Stokes and Stokes 1996). Most other western towhees fledge after 10 to 14 days (Ehrlich et al. 1988, Stokes and Stokes 1996), and green-tailed towhees probably fledge in about the same amount of time. When flushed from the nest, green-tailed towhees run with their tail in the air to draw attention away from the nest (Stokes and Stokes 1996). Stokes and Stokes (1996) remarked that this species is known raise to 2 broods during the breeding season. Green-tailed towhees eat a variety of foods including grass and forb seeds and insects (Ehrlich et al. 1988, Stokes and Stokes 1996). Wild berries are eaten when available in the late summer and fall (Dobkin 1994, Stokes and Stokes 1996). Green-

tailed towhees forage primarily on the ground in leaf litter usually under shrubs (Ehrlich et al. 1988, Dobkin 1994). Green-tailed towhees have a fairly distinctive kitten-like "meew" call. Both Ehrlich et al. (1988) and Dobkin (1994) wrote that cowbirds parasitize green-tailed towhee nests on rare occasions. Morton (1991) found that young green-tailed towhees migrated upslope, probably in search of food after fledging, but before winter migration. Green-tailed towhees have been observed in the Jarbidge Resource Area in late August. Morton (1991) noted that green-tailed towhees seemed to migrate south for the winter in mid to late September.

Status:

Saab and Groves (1992) reported significant declines in green-tailed towhees. Dobkin (1994) noted slight declines of green-tailed towhees for southern Idaho, whereas, Montana populations have declined significantly. The breeding distribution of green-tailed towhees has apparently decreased (Ritter 1996). BBS data show green-tailed towhees are declining throughout their range (Stokes and Stokes 1996). In the fall of 1996 green-tailed towhees were added to the Idaho BLM Sensitive Species list.

Threats:

Bock et al. (1993) did not include green-tailed towhees in species addressed in their review of neotropical birds impacted by grazing. The conversion of mountain sagebrush, or mountain shrub communities to exotic perennial grasslands would likely be detrimental to green-tailed towhees. Medin (1990) commented that this species is found primarily in mid to upper elevation shrublands. In the Jarbidge Resource Area, green-tailed towhees have not been found in either annual grasslands or crested wheatgrass seedings. Heavy season long or fall grazing that reduces willow cover in riparian zones would likely be detrimental to green-tailed towhees using riparian habitats.

River Otter (*Lutra canadensis*)

Description:

River otters are large aquatic members of the weasel family (Mustelidae). In comparison with their body size the legs seem quite short. In adult river otters the head and body measure from 26 to 30 inches with the tail being another 12 to 17 inches in length (Burt and Grossenheider 1976). Larrison and Johnson (1981) and Towell and Tabor (1982) wrote that river otters have a broad snout, somewhat flattened head, prominent whiskers, small ears, webbed feet, and a tail that is thick at the base and tapers to the tip. Overall their fur is a dark brown or, less commonly a pale chestnut with a silvery sheen (Larrison and Johnson 1981, Towell and Tabor 1982). The belly is lighter in color varying from light brown to silver gray (Larrison and Johnson 1981, Melquist 1989). Mink are another dark brown aquatic mustelid that inhabit Idaho and could be confused with river otters. However, mink have white marks on the chin, a bushy tail, and are about half the size of river otters (Larrison and Johnson 1981). The only other large aquatic mammal in Idaho is the beaver, a member of the rodent family, which is lighter brown, has large incisor teeth, and has a horizontally flattened tail that lacks fur (Burt and Grossenheider 1976, Larrison and Johnson 1981).

Distribution:

Historically, river otters were widely distributed across the United States and Canada (Burt and Grossenheider 1976). The current distribution is far more patchy with river otters absent from much of the plains states and southwest (Toweill and Tabor 1982). In the west river otters are found along major rivers and streams. Larrison and Johnson (1981) describe the range of river otters in Idaho as widespread, but the distribution is irregular. Otters are uncommon and often restricted to larger streams as well as rivers and lakes. In the Jarbidge Resource Area river otters have been seen only in the Bruneau and Jarbidge Rivers.

Habitat:

Habitat for river otters is large streams, rivers and lakes, as well as estuaries and coastal marshes with adequate prey (Melquist 1989). Melquist (1989) remarked that river otters seem to require relatively unpolluted water, and are less common in heavily populated areas. Good riparian habitat is an important element in river otter habitat.

Biology:

River otter breeding season occurs from March to May (Melquist 1989). Implantation of the egg is delayed until January or February (Melquist 1989). Gestation lasts for about 60 days and in March to May the female gives birth to a litter of 1 to 5 young, usually 2 or 3 (Burt and Grossenheider 1976, Melquist and Hornocker 1983, Melquist 1989). The female selects a den, frequently an old beaver bank lodge or natural shelter (Melquist 1989). Young otter pups begin venturing outside the den at about 2 months of age and the female and young remain in the area for about 3 months (Toweill and Tabor 1982, Melquist 1989). Apparently, the males does not assist in rearing the young (Melquist 1989). The young are weaned at about 4 months, and are able to survive on their own after 6 months (Melquist 1989). The young may remain with the female into the second year (Toweill and Tabor 1982, Melquist 1989). River otters forage for a variety of foods, but primarily eat larger slow moving fish such as suckers, carp, squawfish, and chubs. Otters also consume some trout and small fish like dace, shiners, and sculpin (Toweill 1974, Larrison and Johnson 1981, Toweill and Tabor 1982). However, river otters are opportunistic and have been known to eat frogs, crayfish, muskrats, rodents, snakes, young waterfowl, snakes and a variety of other prey (Toweill 1974, Melquist 1989). River otters forage in the water by diving and chasing fish. Crustaceans, mussels and clams are dug up, whereas, young waterfowl and small mammals are stalked or ambushed (Toweill and Tabor 1982). River otters have an awkward bounding gait, but are wanderers, and have been known to move cross country 5 to 6 miles to a different stream or lake (Larrison and Johnson 1981). They slide downhill on snow or a mud bank as a means of locomotion. River otters swim by paddling with their webbed feet (Toweill and Tabor 1982). For more rapid swimming the lower part of the back and tail provide more thrust (Toweill and Tabor 1982). Like other members of the mustelid family river otters possess a pair of anal glands (Larrison and Johnson 1981). Toweill and Tabor (1982) and Melquist and Hornocker (1983) mentioned that scent posts are made to mark territory boundaries, specific haul outs and dens. However, Melquist and Hornocker (1983) commented that Idaho river otters did not appear to be very territorial.

Status:

Larrison and Johnson (1981) believed that river otters were generally considered uncommon. Currently, trapping of river otters for their fur is prohibited (Melquist 1989). Idaho BLM has included the river otter as a "watch" species on the Sensitive Species list.

Threats:

Some river otters are trapped incidentally to the legal taking of mink and beaver. River otters have been impacted by habitat fragmentation, habitat and water quality degradation, and over harvesting (Toweill and Tabor 1982).

Dark Kangaroo Mouse (*Microdipodops megacephalus*)

Description:

The dark kangaroo mouse is a small desert rodent in the same family (Heteromyidae) as the more common pocket mice and kangaroo rats (Burt and Grossenheider 1976, Larrison and Johnson 1981). Dark kangaroo mice have a 3 inch body with 4 inch tail (Larrison and Johnson 1981). General characteristics for the family include shortened front legs, with the rear legs and feet much more developed for hopping and jumping (Vaughn 1978). The head seems oversized with large eyes, and fur lined cheek pouches (Vaughan 1978, Larrison and Johnson 1981). Dark kangaroo mice have a bicolored tail which is dark buffy on top and white underneath, and is thicker in the middle than either end (Burt and Grossenheider 1976, Larrison and Johnson 1981). The back and side down to the lateral line is buffy gray or darker with white ear patches (Larrison and Johnson 1981). Below the lateral line the belly, throat, chin, and nose are white to a light cream color (Larrison and Johnson 1981). The feet are grayish (Larrison and Johnson 1981) and the tip of the tail is usually blackish (Burt and Grossenheider 1976). There are two species of pocket mice that could be confused with dark pocket mice in Idaho. However, neither pocket mouse species has a tail that is thickened in the center (Larrison and Johnson 1981). Kangaroo rats are much larger in body size (4 to 5 inches) than the dark kangaroo mouse (Burt and Grossenheider 1976, Larrison and Johnson 1981).

Distribution:

Dark kangaroo mice are distributed over parts of central Oregon, south to eastern California, across Nevada to western Utah, and slightly into southcentral Idaho (Burt and Grossenheider 1976). Larrison and Johnson (1981) commented that the dark kangaroo mouse had been found in southwestern Owyhee County, Idaho.

Habitat:

Dark kangaroo mouse habitat is described as hot sagebrush communities on fine sandy soils (Burt and Grossenheider, Larrison and Johnson 1981). O'Farrell and Blaustein (1974) reported that the dark mouse is most commonly found on fine, gravelly soils, but is also found in sand dunes near the margins of its range. In addition to sagebrush, other shrub species that may be present include rabbitbrush, spiny hopsage, and shadscale. On slightly finer textured soils four-wing saltbush could be present.

Biology:

Dark kangaroo mice like other members of the Heteromyid family are nocturnal and live in burrow systems during the day. This burrow system is simple, short, and generally unbranched. Dark kangaroo mice give birth to a litter of 2 to 7 young from May to early September (O'Farrell and Blaustein 1974, Burt and Grossenheider 1976). There is evidence that female dark kangaroo mice enter estrus more than once a year, but multiple litters have not been confirmed (O'Farrell and Blaustein 1974). Reproduction is negatively affected by fall and winter drought (O'Farrell and Blaustein 1974). Dark kangaroo mice eat grass and forb seeds and arthropods (Burt and Grossenheider 1976). Harris (1986) reported that dark kangaroo mice are generalists and they prey on beetles, crickets, ants, scorpions, spiders, flies, caterpillars, and other insects. Dark kangaroo mice cache seeds in their burrow for later consumption (O'Farrell and Blaustein 1974). This species closes its burrow openings during the day (Burt and Grossenheider 1976). It is not known if dark kangaroo mice make nests in their burrows in the wild, however, captive dark kangaroo mice are known to construct elaborate nests (O'Farrell and Blaustein 1974). O'Farrell and Blaustein (1974) and O'Farrell (1978) noted that male dark kangaroo mice maintained a larger home range at 1.6 acres than females at 1.0 acres. Home range sizes change seasonally in the dark kangaroo mouse (O'Farrell 1978). Adult dark kangaroo mice, exhibit strong fidelity to their territory (O'Farrell and Blaustein (1974). Like other members in the Heteromyid family, dark kangaroo mice can survive extended periods without free water. Because of their physiology they get enough moisture in their diet (Burt and Grossenheider 1976, Vaughan 1978). Unlike some of the other desert rodents, the dark kangaroo mouse uses fat stored in its tail during times of food shortages including overwintering (Harris 1987). Harris (1987) noted that dark kangaroo mice with thick tails more successfully overwintered than those without thick tails. Dark kangaroo mice apparently do not occupy cultivated areas (Burt and Grossenheider 1976). O'Farrell and Blaustein (1974) suggest that dark kangaroo mice were subordinate to pocket mice and that pocket mice inhibited the movements and activity of dark kangaroo mice. Dark kangaroo mice are believed to enter hibernation in the winter to avoid weather extremes (O'Farrell and Blaustein 1974, Burt and Grossenheider 1976). Most dark kangaroo mice are found outside their burrows during the first two hours after sunset (O'Farrell and Blaustein 1974). During the summer there is usually a second peak of activity prior to sunrise (O'Farrell and Blaustein 1974). A number of factors known to reduce dark kangaroo mouse activity include moonlight, wind, rain, and temperatures that are too warm or cool (O'Farrell and Blaustein 1974). Kangaroo rats and kangaroo mice have bodies specialized for jumping (Vaughan 1978). The dark kangaroo mouse is primarily bipedal in locomotion (O'Farrell and Blaustein 1974), and when frightened moves in a series of erratic hops (Vaughan 1978). All members of the Heteromyid family have excellent hearing (Vaughan 1978). There is no information regarding the longevity of wild dark kangaroo mice, but captives have lived over 5 years (Egoscue et al. 1970).

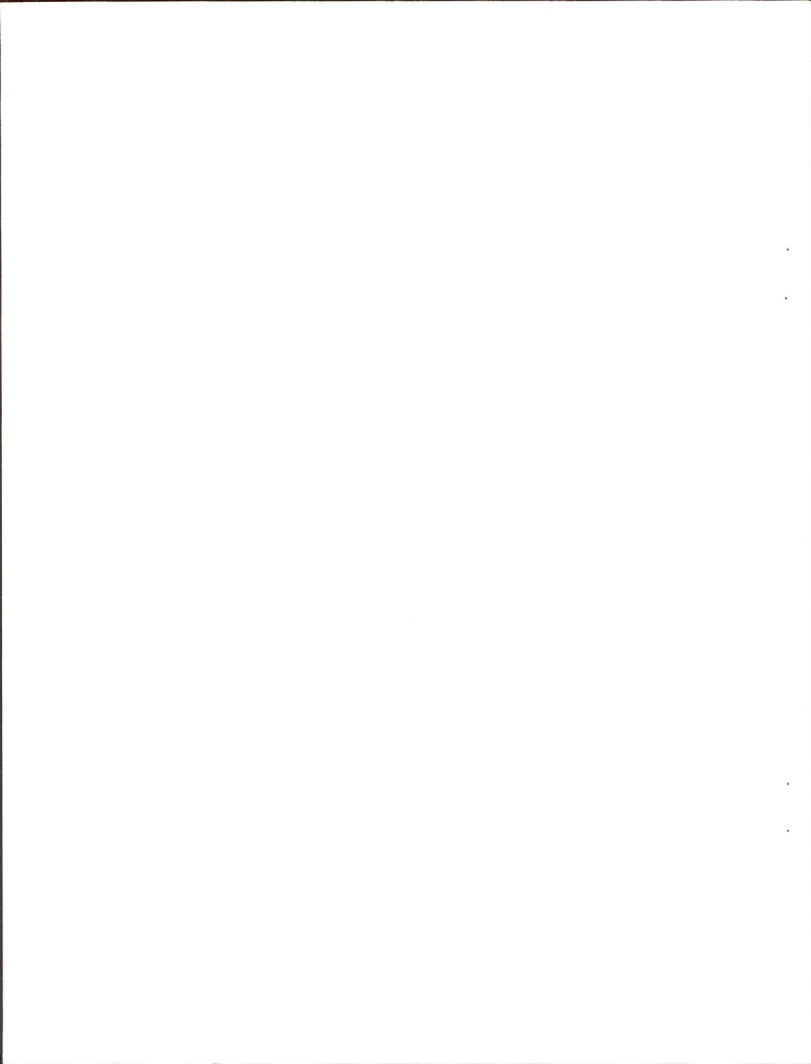
Status:

Little is known about dark kangaroo mice in Idaho. This species has not been confirmed to be in the Jarbidge Resource Area. The dark kangaroo mouse has been on the Idaho Fish & Game's Species of Special Concern list for a number of years (Conservation Data Center 1990, Conservation Data Center 1994) and was added to the Idaho BLM Sensitive Species list in 1996.

Threats:

The possible expansion of cheatgrass into salt/desert shrub communities may be detrimental to the dark kangaroo mouse if the native annual and perennial plant species are required in the habitat for this species. Some small mammals native to sagebrush/grassland communities have much lower densities or are extirpated by the conversion of native habitat to exotic vegetation (Reynolds and Trost 1980). Since dark kangaroo mice are known to eat the seeds from annual grasses and forbs, research needs to be conducted to determine if dark kangaroo mice would be affected by annual grassland monocultures. The control of grasshoppers or crickets with some types of poison could potentially have an adverse impact on the dark kangaroo mouse through either direct consumption of poisoned bait, or secondary poisoning through the consumption of dead insects.

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Literature Cited

- Aldrich, J. W. 1963. Geographic orientation of American tetraonidae. *J. Wildl. Manage.* 27: 529-545.
- Armstrong, D. P. 1987. Economics of breeding territory in male Calliope hummingbirds. *Auk* 104:242-253.
- Balda, R. P., B. C. McKnight, and C. D. Johnson. 1975. Flammulated owl migration in the southwestern United States. *Wilson Bull.* 87:520-533.
- Baldwin, P. H. and W. H. Hunter. 1963. Nesting and nest visitors of the Vaux's swift in Montana. *Auk* 80:81-85.
- Baldwin, P. H. and N. K. Zackowski. 1963. Breeding biology of the Vaux's swift. *Condor* 65:400-406.
- Balgooiyen, T. G. 1969. Pygmy owl attacks California quail. *Auk* 86:358.
- Barlow, J. C. and W. B. MacGillivray. 1983. Foraging and habitat relationships of the sibling species willow flycatcher (*Empidonax trailii*) and alder flycatcher (*E. alnorum*) in southern Ontario. *Can. J. Zool.* 61:1510-1516.
- Barnard, P. E., B. MacWhirter, R. Simmons, G. A. Hansen, and P. C. Smith. 1987. Seasonal importance of passerine prey to northern harriers. *Can. J. Zool.* 65:1942-1946.
- Beauvais, G., J. H. Enderson, and A. J. Margo. 1992. Home range, habitat use and behavior of prairie falcons wintering in east-central Colorado. *J. Raptor Res.* 26:13-18.
- Beaver, D. L. and P. H. Baldwin. 1975. Ecological overlap and the problem of competition and sympatry of the western and Hammond's flycatchers. *Condor* 77:1-13.
- Beck, T. D. I. 1977. Sage grouse flock characteristics and habitat selection in winter. *J. Wildl. Manage.* 41:18-26.
- Beletsky, L. D., G. H. Orians, and J. C. Wingfield. 1990. Steroid hormones in relation to territoriality, breeding density, and parental behavior in male yellow-headed blackbirds. *Auk* 107:60-68.
- Bent, A. C. 1953. Life histories of North American wood warblers. United States National Museum Bull. No. 211, Washington, DC. 549 p.

- Best, L. B. 1972. First year effect of sagebrush control on two sparrows. *J. Wildl. Manage.* 36:534-544.
- Blakesley, J. A. and K. P. Reese. 1988. Avian use of campground and non-campground sites in riparian zones. *J. Wildl. Manage.* 52:399-402.
- Bock, C. E. 1970. The ecology and behavior of the Lewis woodpecker (*Asyndesmus lewis*). Univ. Calif. Publ. Zool. No. 91. 100 p.
- Bock, C. E. and D. L. Larson. 1986. Winter habitats of sapsuckers in southeastern Arizona. *Condor* 88:246-247.
- Bock, C. E., V. A. Saab, T. D. Rich, and D. S. Dobkin. 1993. Effects of livestock grazing on Neotropical migratory landbirds in Western North America. pp. In *Status and Management of Neotropical Migratory Birds*. U. S. Dep. Agric. For. Serv., Rocky Mountain For. Range Exp. Stn., Gen. Tech. Rep. RM-229, Fort Collins, CO. 422 p.
- Bollinger, E. K. and E. T. Linder. 1994. Reproductive success of neotropical migrants in a fragmented Illinois forest. *Wilson Bull.* 106:46-54.
- Braun, C. E., M. F. Baker, R. L. Eng, J. S. Gashwiler, and M. H. Schroeder. 1976. Conservation committee report on effects of alteration of sagebrush communities on the associated avifauna. *Wilson Bull.* 88:165-171.
- Brittingham, M. C. and S. A. Temple. 1983. Have cowbirds caused forest songbirds to decline? *BioScience* 33:31-35.
- Brown, B. T. 1988. Breeding ecology of a willow flycatcher population in Grand Canyon, Arizona. *Western Birds* 19:25-33.
- Brunton, D. F., S. Andrew, and D. G. Paton. 1979. Nesting of the calliope hummingbird in Kananskis Provincial Park, Alberta. *Can. Field-Nat.* 93:449-451.
- Bull, E. L. 1991. Summer roosts and roosting behavior of Vaux's swift in old-growth forest. *Northwest Nat.* 72:78-82.
- Bull, E. L. and R. G. Anderson. 1978. Notes on flammulated owls in northeastern Oregon. *Murrelet* 59:26-28.
- Bull, E. L., J. E. Hohman, and M. G. Henjum. 1987. Northern pygmy-owl nests in northeastern Oregon. *J. Raptor Res.* 21:77-78.
- Bull, E. L. and R. C. Beckwith. 1993. Diet and foraging behavior of Vaux's swifts in northeastern Oregon. *Condor* 96:1016-1023.

- Bull, E. L. and C. T. Collins. 1993. Vaux's swift (*Chaetura vauxi*). In A. Poole and F. Gill (eds.), The Birds of North America, No. 77, Academy of Natural Sciences, Philadelphia, American Ornithologist Union, Washington, DC. 12 p.
- Bull, E. L. and H. D. Cooper. 1991. Vaux's swift nests in hollow trees. *Western Bird* 22:85-91.
- Bull, E. L. and J. E. Hohmann. 1993. The association between Vaux's swift and old growth forests in northeastern Oregon. *Western Birds* 24:38-42.
- Bull, E. L. and E. C. Meslow. 1977. Habitat requirements of the pileated woodpecker in northeastern Oregon. *J. For.* 75:335-337.
- Bull, E. L., A. L. Wright, and M. G. Henjum. 1990. Nesting habitat of flammulated owls in Oregon. *J. Raptor Res.* 24:52-55.
- Bump, S. R. 1986. Yellow-headed blackbird nest defense: aggressive responses to marsh wrens. *Condor* 88:328-335.
- Burt, W. H. and R. P. Grossenheider. 1976. A Field Guide to the Mammals, 3rd ed. Houghton Mifflin Co., Boston, MA. 289 p.
- Busby, D.G. and S.G. Sealy. 1979. Feeding ecology of nesting yellow warblers. *Can. J. Zool.* 57:1670-1681.
- Calder, W. A. 1971. Temperature relationships and nesting in the Calliope hummingbird. *Condor* 73:314-321.
- Calder, W. A. 1993. Rufous hummingbird (*Selasphorus rufus*). In A. Poole and F. Gill (eds.), The Birds of North America, No. 53, Academy of Natural Sciences, Philadelphia, American Ornithologist Union, Washington, DC. 19 p.
- Calder, W. A. and E. G. Jones. 1989. Implications of recapture data for migration of the rufous hummingbird (*Selasphorus rufus*) in the Rocky Mountains. *Auk* 106:488-489.
- Calder, W. A. and L. L. Calder. 1994. Calliope hummingbird (*Stellula calliope*). In A. Poole and F. Gill (eds.), The Birds of North America, No. 135, Academy of Natural Sciences, Philadelphia, American Ornithologist Union, Washington, DC. 16 p.
- Cannings, R. J. and S. R. Cannings. 1982. A flammulated owl nests in a nest box. *Murrelet* 63:66-68.
- Cherry, J. D. 1985. Early autumn movements and prebasic molt of Swainson's thrushes. *Wilson Bull.* 97: 368-370.

- Clary, W. P. and D. E. Medin. 1990. Differences in vegetation biomass and structure due to cattle grazing in a northern Nevada Riparian Ecosystem. U.S. Dep. Agric. For. Serv. Intermtn. Res. Stn., Res. Pap. INT-427, Ogden, UT. 8 p.
- Cody, M. L. 1971. Finch flocks in the Mojave Desert. *Theor. Pop. Biol.* 2:142-158.
- Connelly, J. W., W. L. Wakkinen, A. D. Apa, and K. P. Reese. 1991. Sage grouse use of nest sites in southeastern Idaho. *J. Wildl. Manage.* 55:521-524.
- Connelly, J. W., R. A. Fischer, A. D. Apa, K. P. Reese, and W. L. Wakkinen. 1993. RENESTING by sage grouse in southeastern Idaho. *Condor* 95:1041-1043.
- Conservation Data Center. 1990. Rare, threatened and endangered plants and animals of Idaho. Idaho Dept. Fish Game, Boise, ID. 33 p.
- Conservation Data Center. 1994. Rare, threatened and endangered plants and animals of Idaho, 3rd ed. Idaho Dept. Fish Game, Boise, ID 39 p.
- Crockett, A. B., Jr., and H. H. Hadow. 1975. Nest site selection by Williamson and red-naped sapsuckers. *Condor* 77:365-368.
- Crockett, A. B., Jr. and P. L. Hansley. 1977. Coition, nesting and post-fledging behavior in the Williamson's sapsucker in Colorado. *Living Bird* 16:7-19.
- Dalke, P. D., D. B. Pyrah, D. C. Stanton, J. E. Crawford, and E. F. Schlatterer. 1963. Ecology, productivity and management of sage grouse in Idaho. *J. Wildl. Manage.* 27:811-841.
- Davis, D. E. 1954. The breeding biology of the Hammond's flycatcher. *Auk* 72:164-171;
- Davis, J., G. F. Fisler, and B. S. Davis. 1963. The breeding biology of the Western flycatcher. *Condor* 65:337-382.
- Dawson, W. R., C. Carey, C. S. Adkisson, and R. D. Ohmart. 1979. Responses of Brewer's and chipping sparrows to water restriction. *Physiol. Zool.* 52:529-541.
- Dickson, J. G., R. N. Conner, and J. H. Williamson. 1983. Snag-retention increases bird use of a clear-cut. *J. Wildl. Manage.* 47:799-804.
- Dobkin, D. S. 1994. Conservation and Management of Neotropical Migrant Landbirds in the Northern Rockies and Great Plains. Univ. Idaho Press, Moscow, ID. 220 p.

- Dobkin, D. S. and B. A. Wilcox. 1986. Analysis of natural forest fragments: riparian birds in the Toiyabe Mountains, Nevada. pp. 293-299. In J. Verner, M. L. Morrison, and C. J. Ralph (eds.), *Wildlife 2000: Modeling Habitat Relationships of Terrestrial Vertebrates*. Univ. Wisconsin Press, Madison, WI. 470 p.
- Douglas, D. C., J. T. Ratti, R. A. Black, and J. R. Alldredge. 1992. Avian habitat associations in riparian zones of Idaho's Centennial Mountains. *Wilson Bull.* 104:485-500.
- Drut, M. S. W. H. Pyle, and J. A. Crawford. 1994. Technical Note: diets and food selection of sage grouse chicks in Oregon. *J. Range Manage.* 47:90-93.
- Duebbert, H. F. and J. T. Lokemoen. 1977. Upland nesting of American bitterns, marsh hawks, and short-eared owls. *Prairie Nat.* 7:33-40.
- Dufty, A. M., Jr. 1994. Rejection of foreign eggs by yellow-headed blackbirds. *Condor* 96:799-801.
- Egoscue, H. J., J. G. Bittmann, and J. A. Petrovich. 1970. Some fecundity and longevity records for captive small mammals. *J. Mammal.* 51:622-623.
- Ehrlich, P. A., D. S. Dobkin, and D. Wheye. 1988. *The Birder's Handbook*. A Fireside Book, Simon & Shuster, Inc., New York, NY. 785 p.
- Emmons, S. R. and C. E. Braun. 1984. Lek attendance of male sage grouse. *J. Wildl. Manage.* 48:1023-1028.
- Enderson, J. H. 1964. A study of the prairie falcon in the central Rocky Mountains. *Auk* 81:332-352.
- Ettinger, A. O. and J. R. King. 1980. Time and energy budgets of the willow flycatcher (*Empidonax trailii*) during the breeding season. *Auk* 97:533-546.
- Finch, D. M. 1989. Habitat use and habitat overlap of riparian birds in three elevational zones. *Ecology* 70:866-880.
- Finch, D. M. 1991. Population ecology, habitat requirements, and conservation of neotropical migratory birds. U.S. Dep. Agric. For. Serv., Rocky Mtn. For. Range Exp. Stn., Gen. Tech. Rep. RM-205. Fort Collins, CO. 26 p.
- Finch, D. M. and R. T. Reynolds. 1988. Bird response to understory variation and conifer succession in aspen forests pp. 87-96 In J. Edwards, S. Q. Factor, L. Hayden-Wing, J. Hodgson, J. W. Monarch, A. Smith, O. Thorne, II, and J. Todd (eds.) *Proc. Issues and Technology in the Management of Impacted Western Wildlife Symp.*, Thorne Ecological Institute, Boulder, CO. 177 p.

- Hejl, S. J. and R. E. Woods. 1991. Bird assemblages in old-growth and rotation-aged Douglas-fir/ponderosa pine stands in the Rocky Mountains: a preliminary assessment. pp. 93-100. In D. M. Baumgartner and J. E. Lotan (eds.), Proc. Symposium, Interior Douglas-fir: the species and its management. Washington State Univ., Pullman, WA.
- Hiebert, S. M. 1991. Seasonal differences in the response of rufous hummingbirds to food restriction: body mass and the use of torpor. *Condor* 93:526-537.
- Holmes, R. T. and S. K. Robinson. 1988. Spatial patterns, foraging tactics, and diets of ground-foraging birds in a northern hardwoods forest. *Wilson Bull* 100:377-394.
- Horvath, O. H. 1964. Seasonal differences in rufous hummingbird nest height and their relation to nest climate. *Ecology* 45:235-241.
- Howe, R. R. and R. Ritcey. 1987. Distribution, habitat selection, and densities of flammulated owls in British Columbia. pp. 249-254. In R. W. Nero, R. J. Clark, R. J. Knapton, and R. H. Hamre (eds.). *Biology and Conservation of Northern Forest Owls*. U. S. Dep. Agric. For. Serv. Gen. Tech. RM-142. Fort Collins, CO.
- Hunter, W. F. and P. H. Baldwin. 1962. Nesting of the black swift in Montana. *Wilson Bull.* 74:409-416.
- Hupp, J. W. and C. E. Braun. 1989. Topographic distribution of sage grouse foraging in winter. *J. Wildl. Manage.* 53:823-829.
- Hutto, R. L. 1981a. Seasonal variation in the foraging behavior of some migratory western wood warblers. *Auk* 98:765-777.
- Hutto, R. L. 1981b. Temporal patterns of foraging activity in some wood warblers in relation to the availability of insect prey. *Behav. Ecol. Sociobiol.* 9:195-198.
- Hutto, R. L., S. J. Hejl, C. R. Preston, and D. M. Finch. 1993. Effects of silvicultural treatments on forest birds in the Rocky Mountains: implications and management recommendations. pp. 386-391. In *Status and Management of Neotropical Migratory Birds*. U. S. Dep. Agric. For. Serv., Rocky Mountain For. Range Exp. Stn., Gen. Tech. Rep. RM-229, Fort Collins, CO. 422 p.
- Joern, A. 1988. Foraging behavior and switching by the grasshopper sparrow *Ammodramus savaannarum* searching for multiple prey in a heterogeneous environment. *Am. Mid. Nat.* 119:225-234.
- Johnsgard, P. A. 1983a. *The Grouse of the World*. University of Nebraska Press, Lincoln, NE. 413 p.

- Klott, J. H. and F. D. Lindzey. 1990. Brood habitats of sympatric sage grouse and Columbian sharp-tailed grouse in Wyoming. *J. Wildl. Manage.* 54:84-88.
- Klott, J. H., R. B. Smith, and C. Vullo. 1993. Sage grouse habitat use in the Brown's Bench area of south-central Idaho. U. S. Dep. Interior, Bur. Land Manage. Idaho Tech. Bull. No. 93-4, Boise, ID. 14 p.
- Knopf, F. L., J. A. Sedgewick, and R. W. Cannon. 1988. Guild structure of a riparian avifauna relative to seasonal cattle grazing. *J. Wildl. Manage.* 52:280-290.
- Knopf, F.L., J. A. Sedgewick, and D. B. Inkley. 1990. Regional correspondence among shrubsteppe bird habitats. *Condor* 92:45-53.
- Knorr, O. D. 1961. The geographical and ecological distribution of the black swift in Colorado. *Wilson Bull.* 73:155-170.
- Kodric-Brown, A. and J. H. Brown. 1978. Influence of economics, interspecific competition, and sexual dimorphism on territoriality of migrant rufous hummingbirds. *Ecology* 59:285-296.
- Kondla, N. G. 1973. Nesting of the black swift at Johnson's Canyon, Alberta. *Can. Field-Nat.* 87:64-65.
- Kovalchik, B.L. and W. Elmore. 1992. Effects of cattlegrazing systems on willow-dominated plant associations in central Oregon. pp. 111-119. In W. P. Clary, E. D. McArthur, D. Bedunah, and C. L. Wambolt (comps.), *Proc. Symp. On ecology and management of riparian shrub communities.* U.S. Dep. Agric. For. Serv., Intermtn. Res. Stn., Gen. Tech. Rep. INT-289, Ogden, UT. 232 p.
- Kroodsma, D. E. 1984. Songs of the alder flycatcher (*Empidonax alnorum*) and willow flycatcher (*Empidonax traillii*) are innate. *Auk* 101:13-14.
- Larrison, E. J. and D. R. Johnson. 1981. *Mammals of Idaho.* Northwest Naturalist Book, University of Idaho Press, Moscow, ID. 165 p.
- Larson, D. L. and C. E. Bock. 1986. Determining avian habitat preference by bird-centered vegetation sampling. pp. 37-43. In J. Verner, M. L. Morrison, and C. J. Ralph (eds.). *Wildlife 2000: modeling habitat relationships of terrestrial vertebrates.* University of Wisconsin Press. Madison. 470 p.
- Leonard, M. L. and J. Picman. 1986. Why are nesting marsh wrens and yellow-headed blackbirds spatially segregated? *Auk* 103:135-140.

- Linkhart, B. D. and R. T. Reynolds. 1987. Brood division and post nesting behavior of flammulated owls Wilson Bull. 99:240-243.
- MacLaren, P. A., D. E. Runde, and S. H. Anderson. 1984. A record of tree nesting by prairie falcons in Wyoming. Condor 86:487-488.
- Mannan, R. W., E. C. Meslow, and H. M. Wight. 1980. Use of snags by birds in Douglas-fir forests, western Oregon. J. Wildl. Manage. 44:787-797.
- Mannan, R. W. and E. C. Meslow. 1984. Bird populations and vegetation characteristics in managed and old-growth forests, northeastern Oregon. J. Wildl. Manage. 48:1219-1238.
- Manuwal, D. A. 1970. Notes on the territoriality of Hammond's flycatcher (*Empidonax hammondi*) in western Montana. Condor 70:364-365.
- Marshall, J. T. 1988. Birds lost from a giant sequoia forest during fifty years. Condor 90:359-372.
- Martin, J. W. 1987. Behavior and habitat use of breeding northern harriers in southwestern Idaho. J. Raptor Res. 21:57-66.
- Martin, T. E. 1988. Habitat and area effects of forest bird assemblages: is nest predation an influence? Ecology 69:74-84.
- McCallum, D. A. 1994. Flammulated owl (*Otus flammeolus*). In A. Poole and F. Gill (eds.), The Birds of North America, No. 93, Academy of Natural Sciences, Philadelphia, American Ornithologist Union, Washington, DC. 24 p.
- McCallum, D. A. and F. R. Gehlbach. 1988. Nest-site preferences of flammulated owls in western New Mexico. Condor 90:653-661.
- Medin, D. E. 1985. Breeding bird responses to diameter-cut logging in west-central Idaho. U.S. Dep. Agric. For. Serv., Intermt. Res. Stn., Res. Pap. INT-355, Ogden, UT. 6 p.
- Medin, D. E. 1990. Birds of an upper sagebrush-grass zone habitat in east-central Nevada. U.S. Dep. Agric. For. Serv. Intermt. Res. Stn., Res. Pap. INT-433, Ogden, UT. 7 p.
- Medin, D. E. 1992. Birds of a Great Basin sagebrush habitat in east-central Nevada. U.S. Dep. Agric. For. Serv., Intermt. Res. Stn., Res. Pap. INT-452, Ogden, UT. 4 p.
- Melquist, W. E. 1989. River otter pp. 119-120. In T. W. Clark, A. H. Harvey, R. D. Dorn, D. L. Genter, and C. Groves. (eds.) Rare, sensitive and threatened species of the Greater Yellowstone Ecosystem. Northern Rockies Conservation Cooperative, Montana Natural

- Heritage Program, The Nature Conservancy, and Mountain West Environmental Service. 153 p.
- Melquist, W. E. and M. G. Hornocker. 1983. Ecology of river otters in west central Idaho. *Wildl. Monogr.* 83. 60 p.
- Moore, F. R., aS. A. Gauthreaux, Jr., P. Kerlinger and T. R. Simons. 1995. Habitat requirements during migration: important link in conservation. pp. 121-144. *in* T. E. Martin and D. M. Finch (eds.) *Ecology and Management of Neotropical Migratory Birds*. Oxford University Press, New York. 489 p.
- Morrison, M. L. 1981. The structure of western warbler assemblages: analysis of foraging and habitat selection in Oregon. *Auk* 98:578-588.
- Morrison, M. L. 1991. Bird abundance in forests managed for timber and wildlife resources. *Biol. Conserv.* 60:127-134.
- Morrison, M. L. 1992. The structure of western warbler assemblages: ecomorphological analysis of the black-throated gray and hermit warblers. *Auk* 99:503-513.
- Morrison, M. L. and J. W. Hardy. 1983. Vocalizations of the black-throated gray warbler. *Wilson Bull.* 95:640-643.
- Morse, D. H. 1989. *American Warblers: An ecological and behavioral perspective*. Harvard, Univ. Press, Cambridge, MA. 406 p.
- Morton, E. S. 1992. What do we know about the future of migrant landbirds. p. 579-589. *in* J.M. Hagan, III, and D. W. Johnston (eds.), *Ecology and Conservation of Neotropical Migrant Landbirds*. Smithsonian Institution Press, Washington, DC.
- Morton, M. L. and M. E. Pereyra. 1985. The regulation of egg temperatures and attentiveness patterns in the dusky flycatcher (*Empidonax oberholseri*). *Auk* 102:25-37.
- Morton, M. L. 1991. Postfledging dispersal of green-tailed towhees to a subalpine meadow. *Condor* 93:466-468.
- Mosconi, S. L. and R. L. Hutto. 1982. The effect of grazing on the land birds of a western Montana riparian habitat. pp. 221-233. *in* J. M. Peek, and P. D. Dalke (eds.), *Wildlife-Livestock Relationships Symposium*. For. Wildl. Range Exp. Stn., Univ. Idaho, Moscow. 614 p.
- O'Farrell, M. J. 1978. Home range dynamics of rodents in a sagebrush community. *J. Mamm.* 59:657-668.

- O'Farrell, M. J. and A. R. Blaustein. 1974. *Microdipodops megacephalus*. Mammalian Species No. 46:1-3.
- Ohmart R. D. and E. L. Smith. 1970. Use of sodium chloride solutions by the Brewer's sparrow and tree sparrow. *Auk* 87:329-341.
- Ortega, C. P. and A. Cruz. 1991. A comparative study of cowbird parasitism in yellow-headed blackbirds and red-winged blackbirds. *Auk* 108:16-24.
- Paton, D. C. and F. L. Carpenter. 1984. Peripheral foraging by terrestrial rufous hummingbirds: defense by exploitation. *Ecology* 65:1808-1819.
- Peterjohn, B. G., J. R. Sauer, and C. S. Robbins. 1995. Populations trends from the North American Breeding Bird Survey. p. 3-39. in T. E. Martin and D. M. Finch (eds.) *Ecology and Management of Neotropical Migratory Birds*. Oxford University Press, New York. 489 p.
- Petersen, K. L. and L. B. Best. 1986. Diets of nestling sage sparrows and Brewer's sparrows in an Idaho sagebrush community. *J. Field Ornithol.* 57:283-294.
- Petersen, K. L. and L. B. Best. 1987. Effects of prescribed burning on nongame birds in a sagebrush community. *Wildl. Soc. Bull.* 15:317-329
- Petersen, K. L., L. B. Best, and B. M. Winter. 1986. Growth of nestling sage sparrows and Brewer's sparrows. *Wilson Bull.* 98:535-546.
- Peterson, R. T. 1961. *A field guide to Western Birds*, 2nd ed. Houghton Mifflin Co., Boston, MA. 309 p.
- Peterson, R. T. 1990. *A field guide to Western Birds*, 3rd ed. Houghton Mifflin Co., Boston, MA.
- Petit, D. R., J. F. Lynch, R. L. Hutto, J. G. Blake and R. B. Waide. 1995. Habitat use and conservation in the Neotropics. pp. 145-197. in T. E. Martin and D. M. Finch (eds.) *Ecology and Management of Neotropical Migratory Birds*. Oxford University Press, New York. 489 p.
- Pitocchelli, J. 1995. MacGillivray's warbler (*Oporornis tolmiei*). In A. Poole and F. Gill (eds.), *The Birds of North America*, No. 159, Academy of Natural Sciences, Philadelphia and American Ornithologists Union, Washington, DC. 16 p.
- Raley, C. M. and S. H. Anderson. 1990. Availability and use of arthropod food resources by Wilson's warblers and Lincoln sparrows in southeastern Wyoming. *Condor* 92:141-150.

- Remington, T. E. and C. E. Braun. 1985. Sage grouse food selection in winter, North Park, Colorado. *J. Wildl. Manage.* 49:1055-1061.
- Reynolds, R. T. and B. D. Linkhart. 1987a. Fidelity to territory and mate in flammulated owls. pp. 234-238. *In* R. W. Nero, R. J. Clark, R. J. Knapton, and R. H. Hamre (eds.). *Biology and Conservation of Northern Forest Owls*. U. S. Dep. Agric. For. Serv. Gen. Tech. RM-142. Fort Collins, CO.
- Reynolds, R. T. and B. D. Linkhart. 1987b. The nesting biology of flammulated owls in Colorado. pp. 239-248. *In* R. W. Nero, R. J. Clark, R. J. Knapton, and R. H. Hamre (eds.). *Biology and Conservation of Northern Forest Owls*. U. S. Dep. Agric. For. Serv. Gen. Tech. RM-142. Fort Collins, CO.
- Reynolds, R. T. and B. D. Linkhart. 1990. Longevity records for male and female flammulated owls. *J. Field Ornithol.* 61:243-244.
- Reynolds, R. T., S. M. Joy, and D. G. Leslie. 1994. Nest productivity, fidelity, and spacing of northern goshawks in Arizona. *Studies in Avian Biology* 16:106-113.
- Reynolds, T. D. 1981. Nesting of sage thrasher, sage sparrow, and Brewer's sparrow in southeastern Idaho. *Condor* 83:61-64.
- Reynolds, T. D. and C. H. Trost. 1980. The response of native vertebrate populations to crested wheatgrass planting and grazing by sheep. *J. Range Manage.* 33:122-125.
- Reynolds, T. D. and C. H. Trost. 1981. Grazing, crested wheatgrass and bird populations in southeastern Idaho. *Northwest Sci.* 55:225-234.
- Rice, W. R. 1982. Acoustical location of prey by the marsh hawk: adaption to concealed prey. *Auk* 106:353-357.
- Rich, T. 1980. Nest placement in sage thrashers, sage sparrows, and Brewer's sparrows. *Wilson Bull.* 92: 362-368.
- Ritter, S. 1996. Idaho's nongame landbirds: Making room. Idaho Dept. Fish & Game, Boise, ID. 7 p.
- Robinson, S. K. 1992. Population dynamics of breeding Neotropical migrants in a fragmented Illinois landscape. p. 408-418. *In* J.M. Hagan, III, and D. W. Johnston (eds.), *Ecology and Conservation of Neotropical Migrant Landbirds*. Smithsonian Institution Press, Washington, DC.
- Robinson, S. K., S. I. Rothstein, M. C. Brittingham, L. J. Petit, and J. A. Grzybowski. 1995. Ecology and behavior of cowbirds and their impact on host populations. pp. 428-460. *In* T.

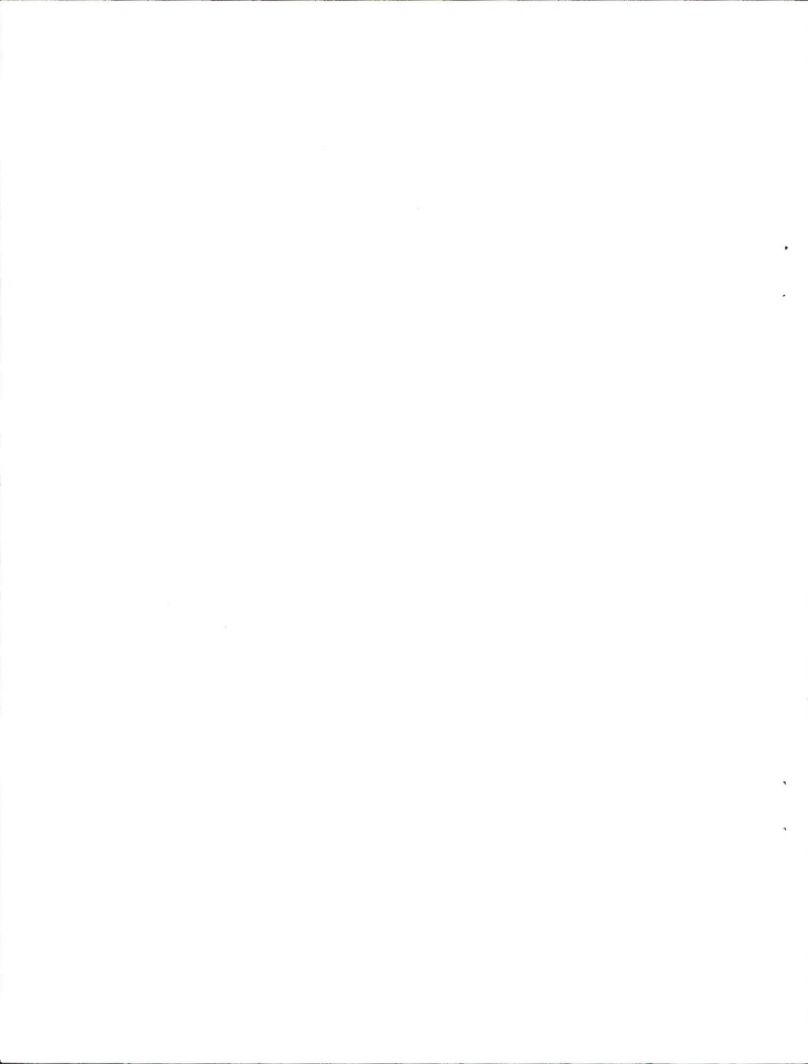
E. Martin and D. M. Finch (eds.) Ecology and Management of Neotropical Migratory Birds. Oxford University Press, New York. 489 p.

- Rotenberry, J. T. 1986. Habitat relationships of shrubsteppe bird: even "good" models cannot predict the future. pp. 217-221. In J. Verner, M L. Morrison, C. J. Ralph (eds.) Wildlife 2000 Modelling habitat relationships of terrestrial vertebrates. Univ. Wisconsin Press, Madison. 470 p.
- Rotenberry, J. T. and J. A. Wiens. 1989. Reproductive biology of shrubsteppe passerine birds: geographical and temporal variation in clutch size, brood size, and fledging success. *Condor* 91:1-14.
- Rothenmire, D. 1979. Sage grouse reproductive ecology: breeding season movements, strutting ground attendance and site characteristics, and nesting. M.S. Thesis. Univ. Wyoming, Laramie. 97 p.
- Saab, V. and C. Groves. 1992. Idaho's migratory landbirds. Nongame Wildlife Leaflet #10, Idaho Dept. Fish Game, Boise, ID. 16 p.
- Sakai, H. F. 1988. Breeding biology and behavior of Hammond's and western flycatchers in northwestern California. *Western Birds* 19(2):49-60.
- Sakai, H. F. and B. R. Noon. 1991. Nest-site characteristics of Hammond's and Pacific-slope flycatchers in northwestern California. *Condor* 93:563-574.
- Schroeder, M. H. and D. L. Sturges. 1975. The effect on the Brewer's sparrow of spraying big sagebrush. *J. Range Manage.* 28:294-297.
- Schroeder, R. L. 1982a. Habitat suitability index models: Yellow warbler. U. S. Dept. Interior, Fish Wildl. Serv. FWS/OBS-82/10.27, Washington, DC. 8 p.
- Schroeder, R. L. 1982b. Habitat suitability index models: yellow-headed blackbird. U.S. Dept. Interior, Fish Wildl. Serv. FWS/OBS-82/10.26, Washington, DC.
- Schulz, T. T. and W. C. Leinger. 1991. Nongame wildlife communities in grazed and ungrazed montane riparian sites. *Great Basin Nat.* 51:286-292.
- Sealy, S. G. 1974. Ecological segregation of Swainson's and hermit thrushes on Langara Island, British Columbia. *Condor* 76:350-351.
- Sedgwick, J. A. 1987. Avian habitat relationships in pinyon-juniper woodland. *Wilson Bull.* 99:413-431.

- Sedgwick, J. A. 1993a. Dusky flycatcher (*Empidonax oberholseri*). In A. Poole and F. Gill (eds.), The Birds of North America, No. 78, Academy of Natural Sciences, Philadelphia and American Ornithologists Union, Washington, DC. 20 p.
- Sedgwick, J. A. 1993b. Reproductive ecology of dusky flycatchers in western Montana. Wilson Bull. 105:84-92.
- Sedgwick, J. A. 1994. Hammond's flycatcher (*Empidonax hammondi*). In A. Poole and F. Gill (eds.), The Birds of North America, No. 109, Academy of Natural Sciences, Philadelphia and American Ornithologists Union, Washington, DC. 16 p.
- Sedgwick, J. A. and F. L. Knopf. 1987. Breeding bird response to cattle grazing of a cottonwood bottomland. J. Wildl. Manage. 51:230-237.
- Sedgwick, J. A. and F. L. Knopf. 1988. A high incidence of brown-headed cowbird parasitism of willow flycatchers. Condor 90:253-256.
- Seutin, G. 1987. Female song in willow flycatchers (*Empidonax trailii*). Auk 104:813-816.
- Sherrod, S. K. 1978. Diets of North American Falconiformes. J. Raptor Res. 12:49-121.
- Short, H. L. 1984. Habitat suitability index models: Brewer's sparrow. U. S. Dept. Interior, Fish Wildl. Serv. FWS/OBS-82/10.83, Washington, DC. 16 p.
- Sousa, P. J. 1983a. Habitat suitability index models: Lewis Woodpecker. U. S. Dept. Interior, Fish Wildl. Serv. FWS/OBS-82/10.32, Washington, DC. 14 p.
- Sousa, P.J. 1983b. Habitat suitability index models: Williamson's sapsucker. U. S. Dept. Interior, Fish Wildl. Serv. FWS/OBS-82/10.32, Washington, DC. 13 p.
- Squires, J. R., S. H. Anderson, and R. Oakleaf. 1989. Food habits of nesting prairie falcons in Campbell County, Wyoming. J. Raptor Res. 157-161.
- Squires, J. R., S. H. Anderson, and R. Oakleaf. 1993. Home range size and habitat-use patterns of nesting prairie falcons near oil developments in northeastern Wyoming. J. Field Ornithol. 64:1-10.
- Stephens, D. A. and S. H. Sturts. 1991. Idaho bird distribution: mapping by latilong. Special Publication No. 11. Idaho Museum Nat. Hist., Pocatello, ID. 76 p.
- Stewart, R. M. 1973. Breeding behavior and the life history of the Wilson's warblers. Wilson Bull 85:21-30.

- Stewart, R. M., R. P. Henderson, and K. Darling. 1977. Breeding ecology of the Wilson's warbler in the high Sierra Nevada, California. *Living Bird* 16:83-102.
- Stokes, D. W. and L. Q. Stokes. 1996. *Stokes field guide to birds: Western region*. Little, Brown and Co., Boston., 519 p.
- Tamm, S., D. P. Armstrong, and Z. J. Tooze. 1989. Display behavior of male calliope hummingbirds during the breeding season. *Condor* 91:272-279.
- Taylor, D. M. 1986. Effects of cattle grazing on passerine bird nesting in riparian habitat. *J. Range Manage.* 39:254-258.
- Taylor, D. M. and C. D. Littlefield. 1986. Willow flycatcher and yellow warbler response to cattle grazing. *Am. Birds.* 40:1169-1173.
- Temeles, E. J. 1989. Effect of prey consumption on foraging activity of northern harriers. *Auk* 106:353-357.
- Temple, S. A. and J. R. Cary. 1988. Modeling dynamics of habitat interior bird populations in fragmented landscapes. *Conserv. Biol.* 2:340-347.
- Thomas, J. W., R. G. Anderson, C. Maser, and E. L. Bull. 1979. Snags. pp. 60-77. In J. W. Thomas (Tech. Ed.) *Wildlife Habitats in Managed Forests: The Blue Mountains of Oregon and Washington*. U.S. Dept. Agric. For. Serv. Handbook 553. 512 p.
- Thompson, F. R., III, J. R. Probst, and M. G. Raphael. 1993. Sivicultural options for neotropical migratory birds. pp. 353-362. In *Status and Management of Neotropical Migratory Birds*. U. S. Dep. Agric. For. Serv., Rocky Mountain For. Range Exp. Stn., Gen. Tech. Rep. RM-229, Fort Collins, CO. 422 p.
- Tobalske, B. W. 1992. Evaluating habitat suitability using relative abundance and fledging success of red-naped sapsuckers. *Condor* 94:550-553.
- Tobalske, B. W., R. C. Shearer, and R. L. Hutto. 1991. Bird populations in logged and unlogged western larch/Douglas-fir forest in Montana. U. S. Dep. Agric. For. Serv. Res. Pap. INT-442., Ogden UT.
- Towell, D. E. 1974. Winter food habits of river otters in western Oregon. *J. Wildl. Manage.* 38:107-111.
- Towell, D. E and J. E. Tabor. 1982. River Otter p. 688-703. In J. A. Chapman and G. A. Feldhamer, eds. *Wild Mammals of North America: biology, management, and economics*. The Johns Hopkins University Press, Baltimore, MD. 1147 p.

- Twedt, D. J., W. J. Bleier, and G. M. Linz. 1991. Geographic and temporal variation in the diet of yellow-headed blackbirds. *Condor* 93:975-986.
- Twedt, D. J. and R. D. Crawford. 1995. Yellow-headed blackbird (*Xanthocephalus xanthocephalus*) In A. Poole and F. Gill (eds.), *The Birds of North America*, No. 192, Academy of Natural Sciences, Philadelphia and American Ornithologists Union, Washington, DC. 28 p.
- Tyrrell, E. Q. and R. A. Tyrrell. 1984. *Hummingbirds: their life and behavior*. Crown Publishers, Inc., New York, NY 212 p.
- Udvardy, M. D. F. 1977. *Audubon Society Field Guide to North American Birds: Western Region*. Chanticleer Press, Alfred, A. Knopf, New York, NY. 852 p.
- Unitt, P. 1987. *Empidonax traillii extimus*: an endangered subspecies. *Western Birds* 18:137-162.
- Vankat, J. L. and J. Major. 1978. Vegetation changes in Sequoia National Park, California. *J. Biogeogr.* 5:377-402.
- Vaughan, T. A. 1978. *Mammalogy*, 2nd ed. Saunders College Publishing, Holt Rinehart and Winston, Philadelphia, PA. 522 p.
- Wiens, J. A. 1973. Interterritorial habitat variation in grasshopper and savannah sparrows. *Ecology* 54:877-884.
- Wiens, J. A., J. T. Rotenberry, and B. Van Horne. 1986. A lesson in the limitations of field experiments: shrub steppe birds and habitat alteration. *Ecology* 67:365-376.
- Wiens, J. A., B. Van Horne, and J. T. Rotenberry. 1990. Comparisons of the behavioral of sage sparrows and Brewer's sparrows in shrubsteppe habitat. *Condor* 92:264-266.
- Wilcove, D. 1985. Nest predation in forest tracts and the decline of migratory songbirds. *Ecology* 66:1211-1214.
- Winter, B. M. and L. B. Best. 1985. Effect of prescribed burning on placement of sage sparrow nests. *Condor* 87:294-295.
- Yahner, R. H. and D. P. Scott. 1988. Effects of forest fragmentation on depredation of artificial nests. *J. Wildl. Manage.* 52:158-161.



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